

THE IRON AGE

A Review of the Hardware, Iron, Machinery, and Metal Trades.

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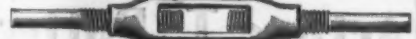
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THE IRON AGE

THURSDAY, NOVEMBER 5, 1903.

A Mechanical Engineer in South Africa.

BY H. V. CONRAD, NEW YORK.

JOHANNESBURG, September 18, 1903.

In all probability, the majority of the readers of *The Iron Age* are more or less familiar through frequent descriptions in print of the gold mining industry of Johannesburg, but may be interested to hear what the impressions are to a stranger first visiting this district, and what is the general condition of affairs at the present time.

After passing through several miles of prospecting and abandoned mining properties, the outposts of the

The city is fortunately located about central to and on the north side of the gold bearing reef now being worked, and which extends approximately 25 miles east and west, or 50 miles in all. It is practically laid out in regular blocks until the outlying residential sections are reached. A mistake has been made in laying out the blocks too small, involving unnecessary miles of streets to take care of, which has been rather poorly done in the past. One explanation of this latter fact is that but a small portion of the money raised by taxation was permitted by the former government to be devoted to the streets. The many sections of roadways now torn up for relaying show progress, and rather confirm the above statement. In the business section the sidewalks are too narrow and could be widened without special disadvantage to the roadways.



A STREET SCENE IN THE SHOPPING DISTRICT OF JOHANNESBURG, SOUTH AFRICA.

active mines, the railway train from the south arrives at Germiston, an important junction point 12 miles east of Johannesburg. At this point the line diverges, one branch, the original main line, running north to Pretoria; the other, west, following the line of mines to Johannesburg.

Johannesburg.

The visitor who expects to find Johannesburg a "mining camp," as ordinarily understood by the term, will or should be agreeably disappointed, as he lands in a veritable city having every indication of permanency, which is all the more impressive considering the few years in which this development has taken place. The confidence with which building operations are carried on, however, can be readily understood, when it is considered as generally conceded that 70 or 80 years will be needed to exhaust the gold bearing reef already located, disregarding further discoveries that are bound to be made as prospecting continues.

While many really fine buildings of stone and brick four and five stories high have been erected, the general colonial architecture for shops exists of two or three stories with balconies extending over the sidewalks. The small and insignificant pioneer buildings are rapidly being replaced by modern structures, the most prominent being a nine-story steel frame office building in process of erection by a New York construction company, with an 11-story one soon to follow and several smaller, but of the same construction.

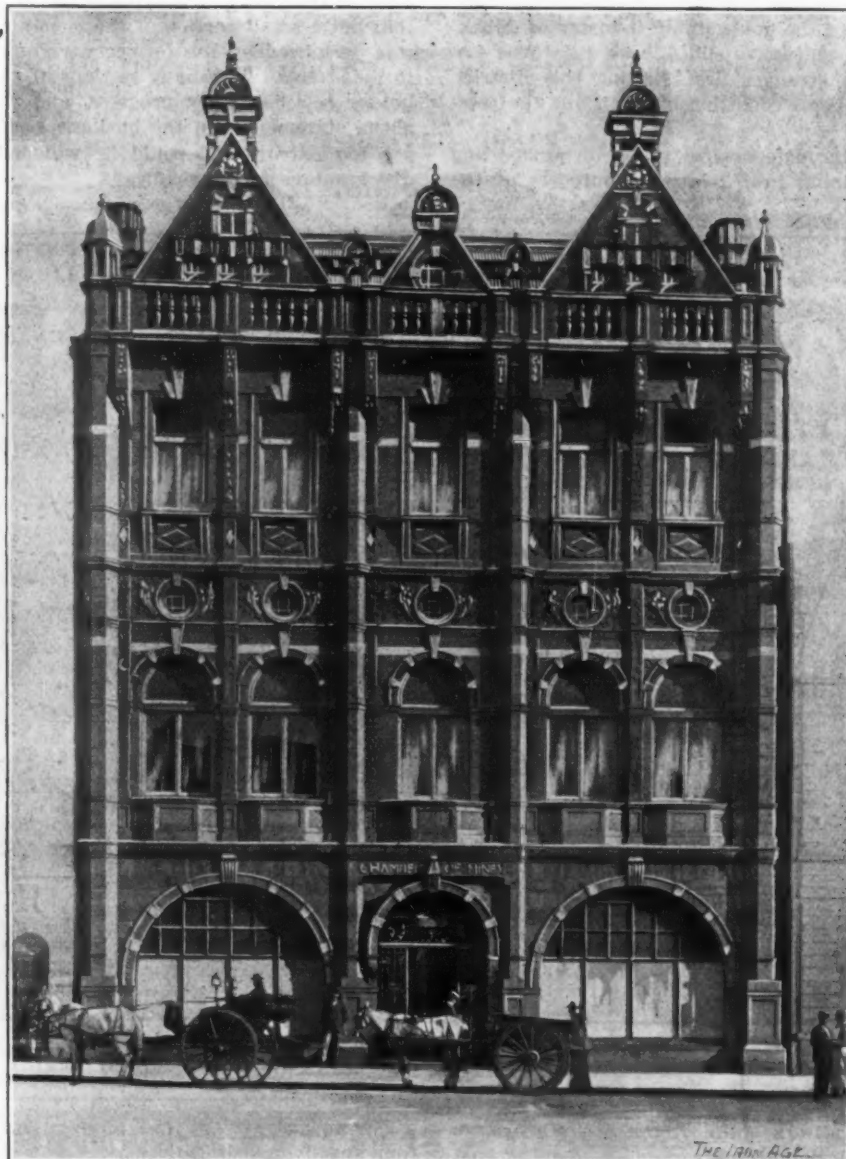
Other prominent buildings in course of construction are a new Stock Exchange, a club house of large proportions and a hotel (much needed), which alone will cover an investment of some \$1,500,000. Building operations represent the most active line of business since the war, as during this period some 2500 houses of all kinds have been finished or are in process of construction, including many fine suburban residences. Even with this growth there is a dearth of small cottages suitable for the man of small income.

Municipal Undertakings.

Public transportation is taken care of by narrow gauge tram cars hauled by three horses or mules; cabs and rickshas. The city authorities have practically decided to install electric street car lines at once, and leave to the future the settlement of the present controversy between themselves and the existing tram company, whose franchise still has a number of years to run. Some apprehension is expressed as to whether the best interests of the public will be served by city control of the tram lines, for if the Government railways (which cover the entire system of British South Africa) are to be taken as a criterion, there is indeed cause for doubt. Men who heretofore have thought that Government con-

ous points in the city. The water is of good quality, and if the reservoirs could be covered so as to keep out dust carried in from the surrounding country by frequent and severe wind storms, it would be entirely safe to use for drinking purposes. The householder, however, must study economy in the use of water drawn from city pipes, inasmuch as he pays \$2.50 per 1000 gallons.

A sewerage system has not been seriously considered, partly on account of the present fairly satisfactory method of collecting by special wagons, and mainly because of the great expense due to excavating through the underlying rock. With the rapid growth of the city the question of sewerage is bound to become a serious one, and even recently the price of baths has been increased



THE CHAMBER OF MINES, JOHANNESBURG, SOUTH AFRICA.

trol of railways might be a good thing are now strong in their condemnation of the system as operated in South Africa. Good electric tram lines are very necessary now and for the future travel of the city, as residential sections extend at least three miles north and east of Market Square, and as but a relative few can afford horses, or care to pay 12-cent fares for a short tram ride, the bicycle is very much in evidence.

Street and house lighting is by electricity, furnished by a private company, whose plant is located 20 miles to the east and convenient to coal mines. The plant as it now exists is hardly adequate for the demand.

The water system of the city, also operated by a private company, is quite complete and of satisfactory service. Covered pipes convey the water from wells located some 30 miles out to the reservoirs, located at vari-

ous points in the city. The water is of good quality, and if the reservoirs could be covered so as to keep out dust carried in from the surrounding country by frequent and severe wind storms, it would be entirely safe to use for drinking purposes. The householder, however, must study economy in the use of water drawn from city pipes, inasmuch as he pays \$2.50 per 1000 gallons.

The Cost of Living.

The cost of living in Johannesburg is probably higher than in any other established city in the world, house rent being about four times what it would be in an American city of the same size, with milk at 28 cents a quart, "fresh eggs from Holland or Madeira" from 50 to 75 cents; "new laid" eggs from \$1.50 to \$2 per dozen; the simplest kind of drinks at 25 cents, and 10-cent cigars at 25 cents each. Daily newspapers are 6 cents each, and all reading matter runs from 50 to 75 per cent. above home prices. Cloth and made up clothing are not excessive in cost; but hats, shoes and tailor-made garments

year about the above percentage of increase. In fact, anything that requires Johannesburg workmanship is relatively expensive. Furniture is ridiculously high—easily 100 per cent. over home cost.

The best seats at the various theatres are \$2.50, which are practically London prices, but the quality of the performances is hardly equal to those of the older town.

In regard to the bare cost of living for the working classes, the single man has the advantage, as he can secure board and room for a moderate price—\$35 to \$40 a month—but a married man, with wife and three children, keeping house, pays about \$120 per month.

Skilled workmen, including miners, are paid \$5 a day as a base price, and, fortunately for them, many miners work by contract, and they are thus able to make from \$200 to \$300 per month.

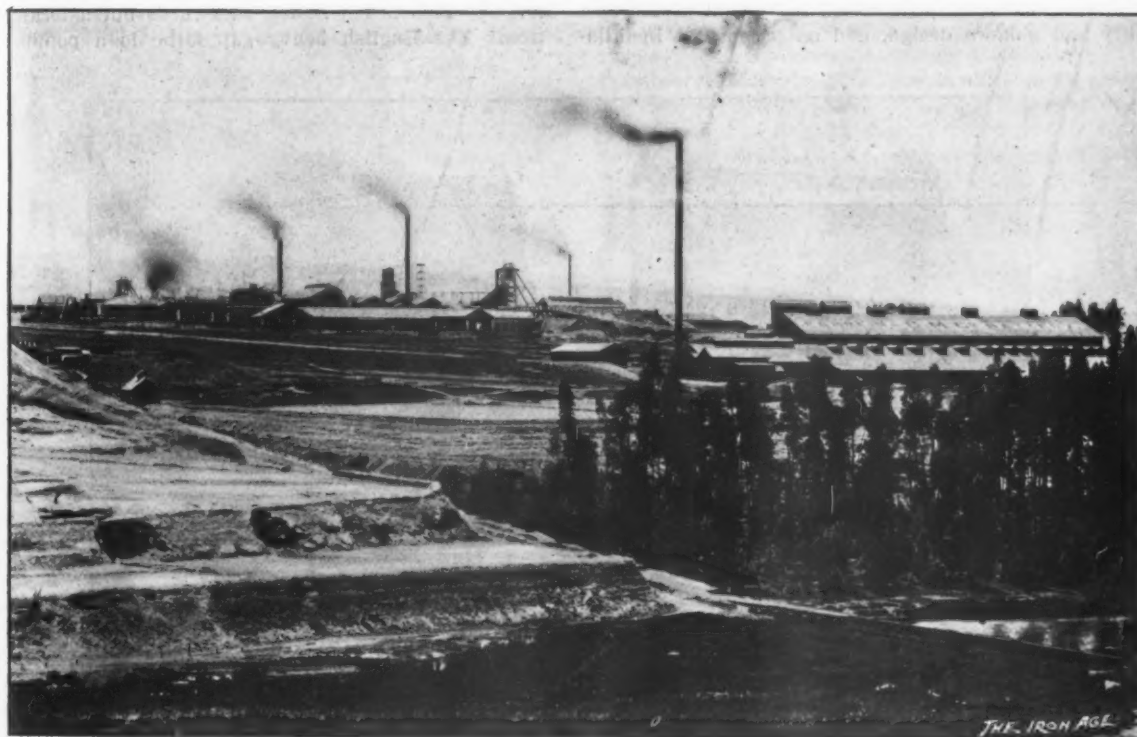
A mason will lay "as many as" 400 bricks a day, other mechanics doing a proportionate amount of work in their respective trades, and as real estate is held at really speculative values the high prices for houses can be readily understood.

As a marked contrast to these conditions of cost, all

of the best output before the war, and the improvement is steady but discouragingly slow, owing to the lack of unskilled labor. Therefore, it might be said that Johannesburg is doing a 60 per cent. business, considering the period before the war as a standard.

Labor.

The question of unskilled labor is the all vital one, and no material progress will be made until a suitable and sufficient supply of laborers is obtained. A Special Commission has been in session many months considering the situation from all sides, and it is now practically conceded that importation of Chinese will soon follow, they being the most available and suitable class for work on the mines. Much opposition against this importation has been shown by the working classes and small shopkeepers, apprehensive that the Chinese would soon become competitors, which no doubt would be the case if not restricted. They also harbor the fear that they would overrun the country. This prejudice is being overcome by explanation, argument and the fact that unskilled labor is required to support skilled labor, and by the



THE FERREIRA GOLD MINING COMPANY, JOHANNESBURG, SOUTH AFRICA.

machinery supplies furnished the mines are sold at competitive, and consequently low, prices, probably netting the manufacturer less per pound than any other market in the world. The cost of selling is necessarily high, and transportation charges from the coast to Johannesburg run from four to five times the oversea charges from Europe or America to the coast. In spite of it all, however, one must admire the good pioneer work done in building thousands of miles of railroad through, in many cases, mountainous and difficult country.

Present Business Conditions.

Every one in Johannesburg complains that business is very dull at present, which statement the writer would say is relative. The prosperity of the community depends entirely upon the mines and such public improvements and railroad construction as immediately concern it.

Immediately after the close of the war speculation in every line became active—in fact, there was a boom; but as work could not be resumed rapidly enough to keep up with anticipation the stock and real estate markets have undergone a relapse. The shopkeepers have not been able to unload their large stocks, and all are waiting and hoping for better conditions.

The output of gold per month is now about 60 per cent.

very deliberate proceedings of the Commission—surprisingly deliberate considering the crying necessity for action.

While statistics show that there is an ample supply of able-bodied Kaffirs in South Africa to meet all demands for labor, only a very small percentage can be induced to work. It is well known that a Kaffir's (all South African tribes are covered by this general term) usual ambition is to earn only enough money to buy a few wives, whose lot in life thereafter is to support him. Where such a course is not feasible he can earn enough at present wages in four months to carry him over the balance of the year, and it is seldom that any consideration will induce him to continue to work. An increase of wages means a longer period of idleness for him.

There are now about 60,000 natives at work at the Johannesburg mines, as compared with 112,000 before the war, and the higher wages and better food now furnished them have brought up the cost per native to the mines about 50 per cent., with the claim that they are a poorer class of workers. Recruiting is at the rate of 6000 or 7000 a month, but as large numbers whose time expires are constantly leaving the net gain is seldom more than 1500 to 2000 per month, and as 100,000 more could be put

to work if available, the necessity for action of some sort is obvious.

Of course only the best paying mines are now able to work, and at an increased cost, being shorthanded, and many excellent but low grade properties are standing idle through lack of native labor, they requiring a full force for profitable operation.

While the output of gold, considering the size of the working force, compares favorably with former results, it must be remembered that only the best mines are working, using improved mechanical appliances where possible, and sacrificing development work.

The relative wages of unskilled whites and blacks at 10 shillings and 2 shillings (including keep) per day show the futility of attempting to work low grade mines with all white labor.

No one without being on the ground can appreciate the magnitude of mining operations at Johannesburg. Think of a reef of ore 50 miles long and at least one mile wide to be taken out, with the decided possibility of even greater area.

The vast amount of machinery necessary for this work now existing is being added to by that of the best quality and modern design, and on permanent installa-

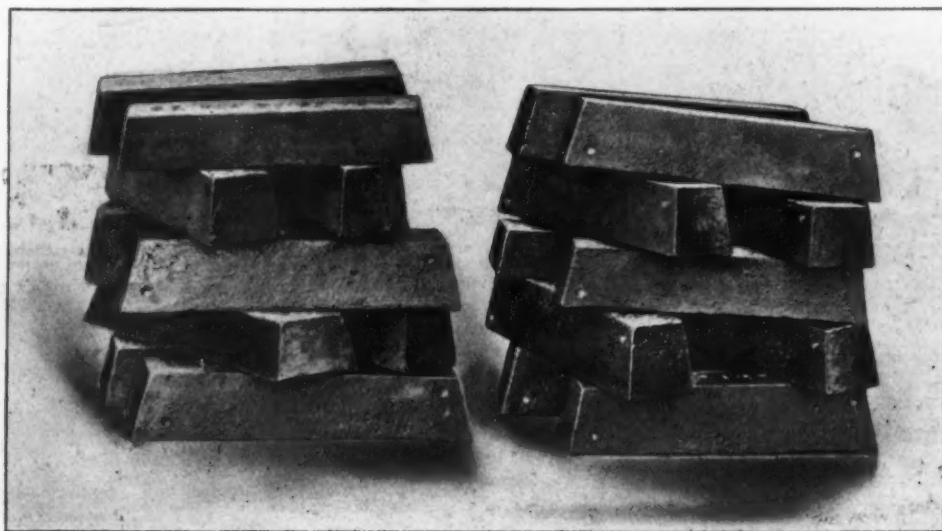
expensive, and managers are not apt to forget the make of machinery that gives them trouble in this respect.

In the repair shops of the mines American machine tools are much in evidence, but not in the majority; still, the best equipped shop at one of the largest mines I observed was entirely American, even to standard practice of gauges and tools in the tool room.

Machine Tools.

It appears that substantial and simple machines are preferred, without numerous attachments for quick changes or repetition work that are never called for in repair shops, since the mines do not attempt to manufacture at present high price of labor, when articles can be purchased in the market. The English tools are considered heavy and reliable, and are likely to grow in favor, while the American is given credit for being handy and quick for light work.

Let the American combine his good features with those of the English tool, make details that will not break, handles that are not easily knocked off, and dispense with automatic stops and quick threading attachments on lathes. This is not a step backwards but a local condition. The English heavy gap lathe is a popular and



PARTIAL CLEAN UP FOR AUGUST, 1897, GLENCAIRN AND NEW PRIMROSE MINES, 8243 OUNCES GOLD.

tions, and no city of the world will show such growth as Johannesburg "as soon as permanent and sufficient labor is secured."

The accompanying pictures show the character of some of Johannesburg's buildings and streets.

English and American Machinery.

One could hardly say that the greater percentage of machinery used on the Johannesburg mines is of American manufacture, but if he considers that furnished by a certain London company, whose parent company is American, as being American in design though built in England, possibly America could claim the majority.

It is safe to assume, however, that English built machinery is holding its own and likely to, except on certain groups of mines controlled by German capital, where naturally German products will be used. The writer has observed that the older engines, both English and American, still running lack the weight and stability to meet present requirements, features that are now insisted on and admissible, due to railroad transportation that was lacking in the early days. The purchasing engineers draw up rigid specifications, which call for first-class workmanship, material and designs that will admit of the heaviest duty in running from week's end to week's end. While they buy on a competitive basis, the engines are taken on their merits rather than on the lowest price. Americans should bear this in mind, as the present impression, founded on fact, unfortunately, is that English machinery is better built. But few mines are equipped with duplicate plants, and break downs are not only serious but

serviceable machine in these repair shops, and it is claimed a similar American tool has not been produced to give as satisfactory results.

Tool Steel.

Mine managers are taking an interest in some of the new high grade tool steels that are gradually being introduced, which will call for the stoutest machines to carry the heavy cuts possible, a fact that should be kept in mind. The trade in rock drill steel seems to have swung around to Sheffield again, the prices and quality seeming to be more satisfactory than offered by the American product.

Opinion is gradually molding in favor of the Lancashire type of steam boiler to work under the local conditions of bad water and good reserve steam supply demanded by hoisting engines. Water tube boilers are troublesome because of above features, and multi-fire tube boilers are rather difficult to clean.

Packing Machinery.

The inefficient American method of packing for export and rough handling continues to be a live topic among engineers. Wherever possible the packages should be reduced in size for safety against damage and for easy handling from ship to lighter and to train. All packages should be marked with the serial number on at least two sides and both ends for easy checking up at transfer points, thus preventing excessive handling to get at the number.

Engine crank disks should be removed from the shaft to avoid risk of bending it, mines preferring this method

of shipping for safety, and are quite willing to force on the disks at the final destination.

Locomotives.

American locomotives on the South African railways are reported to be in the repair shops more often than those of English make, and while but a detail I noticed that the brass valves and fittings on the latter make are of heavier and more attractive design than the former. The English builder is now using the American bar frame and general design, leading one to suppose that such locomotives are built from American drawings.

The standard gauge in this country is 3 feet 6 inches, and as the roads abound in grades up to 1 in 30, machines with ten drivers, a 4-wheel leading and 2-wheel trailing truck, are in general use, built in some cases with separate tender, and others with the tanks on the engine frames.

The best passenger trains are of the American corridor type of compartment cars, mounted on two 4-wheel trucks, and lighted by electricity, and in some cases afford buffet smoking cars, libraries, shower baths, dining cars, &c., but all of English make.

Eight-wheel steel gondola coal cars of 30 tons' capacity are much used, mainly built in England but of undoubted American design. Those furnished by America are re-



HANNA DOUBLE ACTING PNEUMATIC SCREEN SHAKER.

ported as having a habit of loosening their rivets, &c., and passing much of their time in the repair yards.

Traction engines are much used about shipping points and the mines for hauling coal and freight short distances. One of these engines will haul three five-ton wagons over rough roads, showing economy over animal haulage. These machines are all practically of English make.

If American manufacturers are willing to compete in price and furnish only the best material, workmanship and care in their engineering products, there is still and will be a good market in this section of the world, for the future requirements will call for all these qualities.

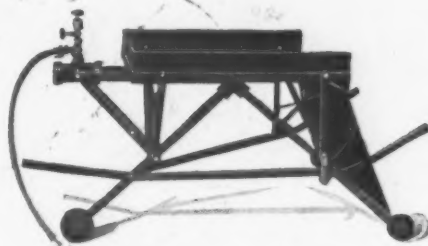
The La Belle Iron Works.—The La Belle Iron Works, Steubenville, Ohio, have appointed the following agents: George A. Taylor & Co., Boston, Mass., to handle their pipe in New England; A. Schroeder, 39 Cortlandt street, New York, to look after New York City and vicinity; R. M. Bailey & Co., Arcade Building, Philadelphia, to take care of business from Trenton, N. J., to Richmond, Va., inclusive. The La Belle Iron Works are manufacturers of basic pig iron, basic open hearth steel billets, blooms and slabs, sheet bars, plates from 6½ to 126 inches wide, steel skelp from ¼ to 12 inches in diameter; also cut nails, shovel and tack plate, and special steel for stamping purposes. The La Belle Iron Works own and operate their own ore mines, coke works, blast furnaces and steel works, and make all their products from the ore to the finished material.

The Department of Commerce and Labor at Washington has issued a pamphlet giving the laws governing importations into the United Kingdom. The number of the Bulletin is 1787, dated October 29, 1903.

Hanna Double Acting Pneumatic Screen Shaker.

The Hanna Engineering Works, Chicago, have been manufacturing single acting pneumatic screen shakers for several years. They have just added to their line the double acting riddle illustrated herewith, this new machine having double the capacity and nearly twice the weight of the smaller machines with which the trade is already well acquainted. The new and larger machine is portable, like the small machines, but it is intended to handle a different class of work. It is operated by a valve controlled double acting cylinder, giving ample power for any load of sand that can be placed upon the screen. The screen is 24 x 36 inches, inside measurements, and is set on a slight incline, the lower side being left open so that the coarse material which will not pass through the screen may work its way thither and discharge over the sheet iron plate at the bottom. This novel feature makes a separation between the fine material and the coarse.

With this machine two men can start at the end of a long sand heap and, moving forward as the unscreened sand is shoveled into the shaker, leave a line of properly screened material in their wake. Two screens are furnished with each machine—a No. 3 mesh and a No. 2. These screens are interchangeable and can be taken out and replaced very quickly by simply removing one nut. The machine is supported on a tripod and is built entirely of steel on the same lines as the smaller patterns.



It weighs approximately 175 pounds, and will screen sand as fast as two good men can shovel it.

Carse Brothers Company, Chicago, are building for the Newport mine, Ironwood, Mich., a large first motion, high pressure, high speed hoist, to replace the old one on the shaft which is sinking to an exceptional depth for an iron mine. As far as their information goes this will be one of the few plants in the Lake Superior country operating under as much as 150 pounds of steam. It is to be a direct acting plant driven by two Corliss engines, designed to run when necessary at 120 revolutions, and the plant will have a capacity of 16,000 pounds at the rate of 2200 feet per minute in a vertical shaft. The fact that hoisting speed is obtained by rapidity of revolution rather than large diameter of the drum permits the plant being handled by hand operating mechanism since the clutch and brake are comparatively light, as compared with the ordinary power gear. The use of this type of hoist is made possible by the high pressure steam plant at the Newport mine. The hoisting plant is designed by Howard Greer, Jr., general manager of Carse Brothers Company, Chicago. It will be installed during the Christmas shutdown, and will go into operation about the first of the year.

The Southern Plantation Development Company, with offices in the Unity Building, Chicago, have purchased 80,000 acres of land in Alabama. The company propose an expenditure of about \$100,000 in an improvement of the property, it being their intention to develop among other industries a large wood turpentine plant. Negotiations are also being made for the establishment of profitable enterprises, among them being a large canning factory by the Iowa Canning Company, Laporte City, Iowa; a saw mill, cane syrup mills, starch factories, &c.

The Schellenbach Keyseating Tool.

A short time since W. L. Schellenbach, president of the National Machine Tool Company, Cincinnati, Ohio, designed a handy little tool for cutting internal keyseats, and the device has proved so satisfactory that the company now announce that they have completed a full line of the tools, capable of cutting key seats of all sizes. The tool is of very simple and unique construction. It is designed to be placed in the ordinary drill press chuck, thus permitting the cutting of the keyseat by simply replacing the drill or boring tool by the keyseating tool. In order that one tool may be used on work of different bore diameters, eccentric bushing, with different outside diameters, as shown in Fig. 1, are employed.

The device is very convenient for cutting blind keyseats, as it obviates the necessity for drilling a hole through the work at the end of the keyseat where the latter does not extend entirely through. As will be noted from the illustrations, the tool mills the keyseat by means of a rotary cutter. In Fig. 2 the parts of the tool are shown. The cutter D is held in position by and has its bearing upon pin B. The cutter is driven by its own teeth by means of the pins inserted in the bottom end of the

driving spindle A. These pins are of hardened steel, and may be driven out of the spindle and replaced in case wear should make it necessary. The pins are so placed as to have a good bearing behind the center of each tooth of the cutter. The teeth are so staggered that the cutting edge of each tooth is only one-third of the full face width. The cutters are a trifle full in face width to allow for grinding; not enough to interfere with the accuracy of width and depth, yet sufficient to allow for reasonable length of service. The rod E is screwed into the collar surrounding the top of the tool, as shown in Fig. 1, to keep the entire tool from revolving, the tool being held rigid when the rod E comes into contact with the frame of the drill press. The guide F follows the cutter into the work, serving to steady the tool and insure a straight keyseat. For cutting taper keyseats in straight holes or keyseats in taper holes special bushings are used. These bushings are simply hollowed out to correspond to the degree of taper required, the work fitting the outside diameter.

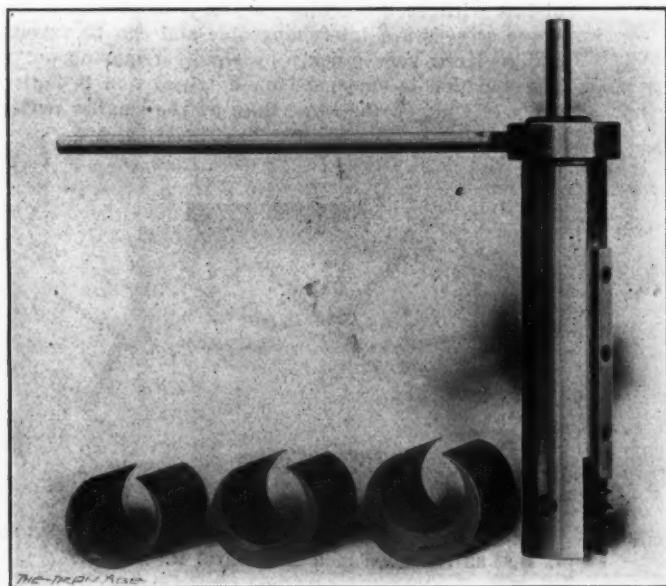


Fig. 1.

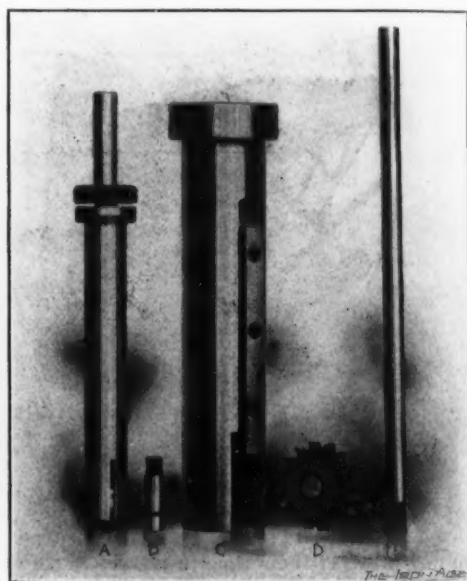


Fig. 2.

THE SCHELLENBACH KEY SEATING TOOL.

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The Chicago dailies have been working themselves into a frenzy over the temporary closing down of certain departments of the Illinois Steel Company's plants at Joliet, South Chicago and Bay View. The officers of the company assure us that these shut downs are temporary—to last two weeks at the outside. They say that they have

The Fall Meeting of the Mechanical Engineers.

The forty-eighth meeting of the American Society of Mechanical Engineers will be held in New York December 1 to 4. As is well known, the society house at 12 West Thirty-first street has become too small to properly accommodate the growing attendance at the meetings, so this year certain of the sessions will be held at more suitable places. The following is a brief outline of the programme as now planned:

At the opening session the president, James M. Dodge, will deliver the annual address, the subject being "The Value of an Engineering Education to a Young Man."

The second session will occur on Wednesday morning at the hall of the Mendelssohn Glee Club, 113 West

Fortieth street, because of the limited seating capacity of the society's auditorium. This will be the business session of the convention, and professional papers will also be presented. Following this luncheon will be served at the society house, and the afternoon will be spent in making excursions to various power stations and points of interest. The evening of this day has been left free for the members to make their own engagements.

The third session will take place in the Carnegie Laboratory of Stevens Institute on Thursday morning at 10 o'clock. Luncheon will be served at the institute, and will be followed by visits to various points of interest in and about the grounds.

The usual reception for guests and friends will be at Sherry's on Thursday evening at 9 o'clock, and will be followed by dancing and supper.

The closing session will be at the society house on Friday morning, December 4, at 10 o'clock.

Following is a list of the nominations for officers of the society for the coming year: For president, Ambrose Swasey, Cleveland, Ohio; for vice-presidents, Prof. D. S. Jacobus, Hoboken, N. J.; M. L. Holman, St. Louis, Mo.; William J. Keep, Detroit, Mich.; for managers, George I. Rockwood, Worcester, Mass.; John W. Lieb, Jr., New York City; Asa M. Mattice, Pittsburgh, Pa.; for treasurer, William H. Wiley, New York City.

The Baker Boring, Facing and Tapping Machine.

Baker Bros. of Toledo are now building a machine designed for heavy boring, counterboring and facing of steel forgings and castings where a large amount of metal is to be rapidly removed. The tool is intended for the heaviest kind of work in locomotive and railroad shops and in shops manufacturing large steam fittings. For the latter service boring and tapping of sizes up to 16 inches diameter may be done.

The main spindle is a forging of high carbon open hearth steel, 4.75 inches in minimum diameter. The diameter of the nose and quill is 7.50 inches. The thrust of the spindle is taken by roller bearings. The spindle is driven by means of a cross arm secured to its top, the extremities of the arm fitting into vertical guideways at opposite sides of the housing shown on top of the main gear in Fig. 1. The cross arm has a length equal to about three times the spindle diameter, and is provided with

tion, and are used for heavy facing. In addition to these belt feeds the machine is provided with a positive geared feed, which, by means of change gears, will give any desired feed from 0.07 to 0.255 inch. These are so arranged that a positive lead of the spindle corresponding to any number of threads from 4 to 14 per inch may be obtained for tapping.

The vertical travel of the spindle is made either 14 or 20 inches. The spindle is counterbalanced and is provided, in addition to the geared and belt feeds already mentioned, with lever feed, hand worm feed and automatic stop. The clear distance from the center line of the spindle to the frame column is 22 inches.

As shown in the illustrations, there is provided upon the plain table a compound slide table, 30 x 36 inches. This is a very desirable attachment for use in readily chucking work, as the piece to be operated upon may be set approximately in position, clamped securely and then brought easily and quickly into line with the spindle or boring bar by means of the table screws. The compound table is also available in heavy facing where it is neces-

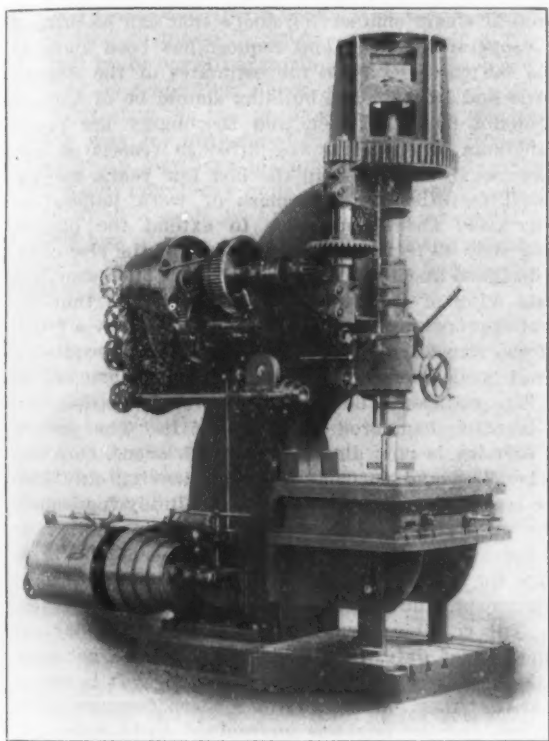


Fig. 1.

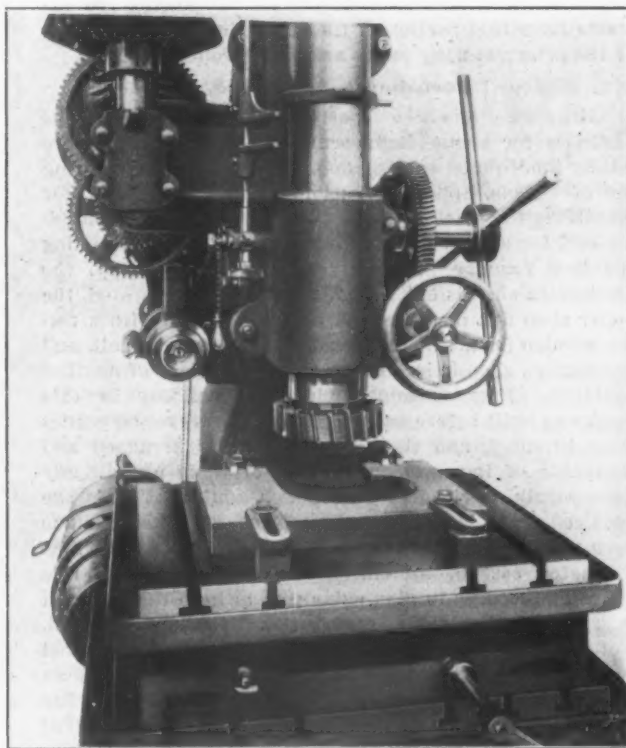


Fig. 2.

THE BAKER BORING, FACING AND TAPPING MACHINE.

broad bearing surfaces which work freely within the guides. This construction is adopted with a view to avoiding the excessive friction occasioned by the usual method of driving by means of a feather in the hub of the driving gear by eliminating the cramping due to torsional strains in the spindle. Furthermore, the frictional pressure acting to increase the stress upon the feed mechanism is reduced by distribution of the driving pressure equally between two surfaces, each at a distance from the center of the spindle equal to about three times the radius of the latter. The bearing surface, and consequently the durability against wear, is also greatly increased.

The entire train of gearing is stated to be very heavy. All spur and bevel gears, as well as worms and worm wheels, are of steel. The main driving gear is 28 inches in diameter, with 4-inch face and 2 pitch. Triple back gears are provided, giving, with the four steps of the cone pulley, 12 changes of speed. The gearing ratio with the triple back gears is 82 to 1, not including the four-step cone pulleys.

The spindle speeds, 12 in number, vary from 2 to 45 revolutions per minute. There are six belt feeds for each spindle feed, varying from 0.054 to 0.003 inch per revolu-

sary to get under the scale. A right and left adjustment of 20 inches is available, while the in and out movement offers a range of 14 inches. Although the machine is not designed for milling, it may be so used to decided advantage in many places. Fig. 2 shows its use as a milling machine, carrying a 12-inch cutter working to a depth of 1½ inches.

The National Association of Stationary Engineers celebrated the twenty-first anniversary of the founding of their national association with a banquet at the Auditorium Hotel, Chicago, October 24. Charles F. Hart of Chicago, national vice-president, acted as toastmaster. Addresses were made by Dr. F. W. Gunsaulus, president of Armour Institute, Chicago, "Education and the Engineer;" John R. Rathom, Chicago, "The Engineer from the Small End of the Telescope;" Herbert E. Stone, Boston, "Advantages Offered by the N. A. S. E.;" E. D. Meier, St. Louis, "The Educational Advancement of the Operating Engineer;" James Henry Harris, Chicago, "Engineers' Position in the Commercial World;" Past President R. G. Ingleson, Cleveland, "The Future of the N. A. S. E.;" John F. McGrath, Chicago, "The Growth of the Engineer;" and Charles H. Garlick, Pittsburgh, "Doing His Duty."

Steam Engineering in the Navy.

Admiral Rae Suggests Numerous Important Improvements.

WASHINGTON, D. C., November 3, 1903.—The first annual report of Admiral C. W. Rae, Chief of the Bureau of Steam Engineering, which has just been forwarded to the Secretary of the Navy, will attract considerable attention because of the urgency of the recommendations made therein for the placing of the steam engineering plants of the principal navy yards on a much more efficient basis than at present. While in no way reflecting upon the administration of his predecessor, Admiral Rae points out the shortcomings of the plants under the jurisdiction of his bureau, and shows where the ability of the yards to reduce the time and cost of making repairs could be materially improved by the erection of modern buildings and the installation of up to date tools and machinery. Admiral Rae comments very favorably upon the work accomplished by the special board appointed to conduct tests of liquid fuel, the results of which will probably be published early in the coming year. Following are extracts from that portion of the report in which the needs of the principal navy yards are pointed out:

Portsmouth Navy Yard.

Although it has been reported year after year that the facilities for steam engineering work at this yard are totally inadequate, causing delay in the repair and fitting out of vessels, appropriations have been made only for rebuilding the machine shop, for an administration building and for a power house and chimney, notwithstanding the iron foundry has been condemned by survey, the blacksmith shop is old, dilapidated and badly located, the boiler shop is a mere shell of corrugated iron with a rotten wooden frame, the coppersmith shop is too small, and the pattern shop is located on the fourth floor of another building. Every steam engineering building in this yard was built before such appliances as traveling cranes were invented, and they are dark, badly arranged and incapable of improvement. Some of them are already dangerously overloaded, and though additional tools are required there is no floor space for them. Request has been made on the Bureau of Yards and Docks to include estimated cost of an entire set of buildings for this bureau, according to plan submitted in its estimates, and it is hoped that their construction will be authorized. Not only new buildings but new tools as well are required for the proper equipment of this yard, and though an appropriation has been asked year after year none has been granted, thought at least \$150,000 will be required for the purpose.

Boston Navy Yard.

During the past year the rebuilding of machine shop No. 1 has been completed and most of the tools moved into it from shop No. 2, which is now, in turn, being rebuilt under contract. The runways for electric traveling cranes for the machine shops and foundry and the electric elevators for pattern and machine shops have been advertised for by the Bureau of Yards and Docks. There is an appropriation available for heavy tools and electric cranes, but another should be made for a power plant and a number of locomotive cranes. That portion of the blacksmith shop now occupied by the equipment department as a chain and forge shop should be returned to steam engineering, since it is badly needed for a pipe fitting shop, storeroom, &c. It was supposed that when the new chain shop built for equipment was completed that department would at once vacate this smithery, but it is now claimed that the new equipment shop will not be large enough even for the purpose intended, and unless other arrangements are made this bureau will be badly crippled. The offices and drawing rooms of the steam engineering department are located in a wooden gallery connecting the machine shop and foundry. Besides being entirely unsuitable for the purpose, on account of noise and dirt, the space is, needed for the installation of a number of light tools and for lockers for stowing gauges, oil cups, &c., of vessels undergoing repairs or in ordinary. The present electric light plant, belonging to Yards and

Docks, is located in a temporary shed just south of the steam engineering shops. As this shed is to be abandoned as soon as the new building for the electric light plant is completed, it is recommended that its site be utilized for an administration building for the steam engineering department.

New York Navy Yard.

Work on the machinery for the "Connecticut" was begun in August, 1902, and has so far progressed very satisfactorily. Contracts have been made for the boilers, forgings, forging materials and steel castings for the main engines and shafting, all pumps and auxiliaries and dynamo condensers. Nearly all of the forging material has been received, and the patterns for steel castings have been completed and shipped to the contractor. Work has been greatly delayed at this yard for want of a coppersmith shop of sufficient size. At present both the iron and brass foundries are encroached on for coppersmith work, with the result that both these foundries are crippled, particularly when a large number of articles, such as grate bars, are required, as frequently happens, for want of sufficient floor room. There is a vacant space adjacent to the power house and north of the present steam engineering shops that can be utilized for a coppersmith shop, and request has been made to include the cost of one in the estimates of the Bureau of Yards and Docks. The building should be of but one story, about 60 x 150 feet, and thoroughly fire proof. The amounts of copper piping fitted in vessels of war has enormously increased in the last few years, making increased facilities for this class of work imperative. Appropriation should be made to extend the present erecting shop 40 feet, to make this shop of the size originally designed and symmetrical with the boiler shop, the opposite wing of the building. It was found that the original appropriation was not sufficient to allow a building of the size intended to be erected, and consequently, to avoid a deficiency, the building was shortened 40 feet. The additional floor space is greatly needed, and work is often hampered for want of it. The present brass foundry is now almost filled with ovens, core and other benches, and furnaces for pots, leaving only 3500 square feet of floor space, which is absolutely inadequate for the work required. This department, in addition to work for steam engineering, makes most of the brass castings for yards and docks and ordnance, and many for equipment, and additional space is absolutely necessary. The crucible furnaces in the brass foundry are old and out of date, making it impossible to get more than three heats a day from each crucible. It is recommended that they be replaced by modern furnaces using oil or gas, thereby enabling the output to be increased. A one-story building, 30 x 60 feet, is recommended to be built at or near the junction of the causeway and common, for boilers and pumps for a steam heating plant. On vessels in ordinary and under repairs work is often delayed in this department for several weeks on account of the inability to take steam off their boilers. By having a plant on shore in the near vicinity much time and money will be saved, and work will progress rapidly. Boilers, pumps and necessary piping for this plant are on hand, and the only cost of this plant will be for installation. The installation of a cold saw cutting machine for metal in the machine shop is also recommended.

League Island Navy Yard.

Progress has been made in the construction of the new buildings for the steam engineering department of this yard, and it is hoped that they will be far enough advanced at the close of the present fiscal year to allow the installation of some of the larger tools. The plans comprise a complete outfit of shops, of ample size and well arranged, but unfortunately no appropriation has yet been made for an administration building. Quite a number of power tools have been added during the year. These include lathes of various sizes, shapers, punches and shears, slotters, milling machines, air compressors, locomotive crane, bending tools, grinding machines, boring mills, &c. The regular inspections have been made of steam generators and necessary repairs made to them.

A large number of additional tools are needed in this yard, but though there is an appropriation available for their purchase there is no place to set them up, and will not be until the new shops are completed.

Norfolk Navy Yard.

During the year the new smithery and copper shops have been completed, and are now occupied and in use. Power for the smithery is furnished by a portable boiler, pending the connection to main boiler plant now being built. The copper shop is operated by electric motor. The steam hammers and forges have been moved from boiler shop to smithery, and in the space occupied by them two boiler makers' forges and flanging forms have been installed, together with one shearing, one punching and one horizontal bending machine. In the heavy tool shop foundations have been prepared for the following tools, which are now being transferred: Erecting bed, 25 x 50 feet; planer, 24 x 13 x 12 feet; lathe, 102 inches by 25 feet; lathe, 96 inches by 20 feet; slotter, 30-inch stroke to center of 12 feet; boring mill, 84 inches by 4 feet; boring mill, 80 inches by 9 feet; 68-inch radial drill; also a number of small tools. The new pattern shop is also well advanced in construction, and it is hoped that it will be in operation during the coming winter. There should be a building, about 30 feet square, provided for a paint shop, as the present one will be demolished to make way for authorized improvements. There should also be an auxiliary machine shop adjoining the fitting out basin now being built, to avoid long travel of workmen from vessels in basin to main shop, with consequent loss of time and increase of cost of work. A portion of the lower floor of one of the adjacent buildings might be utilized for this purpose.

Charleston Navy Yard.

In making appropriations for steam engineering buildings at this yard no provision was made for smithery, boiler shop nor administration building. It is proposed to move the machine shop from Port Royal to this yard and utilize it to the best advantage. No appropriation has yet been made for tools or machinery plant; a complete outfit will cost \$250,000.

Pensacola Navy Yard.

The machine and pattern shops at this yard are in a building intended for a foundry. The lower floor is of concrete and is about 8 inches lower than the ground; as the roof leaks badly, the whole building is flooded every time it rains. The power tools are mostly of obsolete type and worn out, and in a more important station would long ago have been utilized for scrap. A lathe, drill press, boring mill, shaper and planing machine of moderate size have been contracted for, and when received will comprise nearly the whole outfit available for repair work. The pattern shop, foundry, boiler and copper shops are all small and very poorly provided with tools and conveniences, and to fit them for work already in sight would require an expenditure of at least \$25,000. As many and important repairs will have to be made to the smaller vessels of the fleet during the winter maneuvers and exercises in the Gulf, this bureau should be provided with a complete outfit of shops at this yard, well equipped with tools of moderate size and power. The question of skilled labor at this yard is also a most important one, since work is so irregular that it is almost impossible to obtain first-class mechanics when required. To keep the department in good working condition would require the employment of a small permanent force and work enough to keep it busy.

Puget Sound Navy Yard.

Much delay in the erection of shops for this bureau has been caused by the very uneven character of the ground in this yard and its limited extent, which has made it extremely difficult to arrange for a sufficient number of buildings for each department and so locate them that they can be erected without too great a part of the appropriation being spent for grading and excavating. A plan has finally been decided on and it is hoped there will be no further delay. No appropriation has yet been made for pattern shop, power house, nor administration building, all of which are urgently needed. The expenditures during the year amounted to \$155,611.11.

Mare Island Navy Yard.

There have been no improvements made to the buildings, and, in view of the proposed change of the plant to a location near the new dry dock, no changes are recommended, except that there should be a small detached building erected for a paint shop. There should also be a building for the safe keeping of pipes, valves and various parts of machinery removed from vessels undergoing repairs. A number of valves, &c., have been stolen for want of such a place, as there is no room for them in the shops. The necessity of securing an appropriation for the remaining buildings of the new plant proposed for the steam engineering department cannot be too strongly urged. These buildings comprise foundry, smithery, boiler shop, copper shop, pattern shop, power house and administration building. The need of these is at once apparent when it is stated that the new machine shop is nearing completion and is half a mile from the other shops. When occupied it will require that work be transported backward and forward that distance, which will make its cost almost ruinously expensive, as well as greatly delaying its completion.

New Orleans Naval Station.

The work in progress for this bureau consists in the erection of the north wing of a machine shop, which is the only portion of the building yet contracted for. The iron and brick work is in place and the roof nearly finished. Plans and specifications for the remainder of this building are now being prepared by the Bureau of Yards and Docks, and will soon be submitted. There is a small appropriation available for tools at this station, and they will be contracted for as soon as the buildings are in readiness.

Key West Naval Station.

The new smithery, for which foundations are now prepared, should be completed without delay, as its services are certain to be required during the coming winter. Attention is invited to the present foundry building—its size, facilities and capacity. The building is 36 x 70 feet, and was built in 1875. It has a Byram cupola of 1½ tons capacity, a core oven, a small boiler, blower engine and blower. The brass furnaces are located in one corner of the foundry. With the supply of flasks, sand, &c., in the foundry there is about room enough to cast a ton of grate bars at one time. There is no space around the foundry for storing anything except about 10 feet between it and the cistern at the south end, which space is utilized for the pig and scrap iron and the stairway to the cupola; the east front is on the street line; at the north end is the entrance way to the commandant's house; on the west side are the officers' quarters, within 4 feet of the foundry wall. When the building was erected, 30 years ago, no other space for the foundry was available, but now there is land east of the machine shop on which a suitable foundry could be built. The present foundry has not sufficient capacity for an emergency, and a new building of ample capacity and equipment will be required in the near future.

Cavite (P. I.) Naval Station.

A number of power tools of moderate size have been added to the steam engineering plant at this station during the past year and the facilities for work correspondingly increased. The resources of the station are, however, far from what they should be, considering its importance and the amount of work required of it. The present buildings are entirely unsuited for a proper outfit of modern tools, and, in the opinion of this bureau, the interests of the Government will be best served if an entire new set is furnished without delay. Much delay has sometimes been caused by lack of materials and want of proper facilities for transporting workmen back and forth from vessels undergoing repairs. To remedy the first of these requires that a large supply of stores of all kinds be carried in the Naval Supply Fund, since the market in Manila for such articles is poor and but few can be obtained nearer than Hongkong.

Liquid Fuel Tests.

With regard to the liquid fuel tests conducted by the Edwards Board, a preliminary report upon which was published a year ago, Admiral Rae says:

During the past year there was completed the extended series of tests projected by the bureau for determining the value of liquid fuel for naval purposes. The fact that these tests were made under a boiler capable of being forced to 2000 horse-power and that an extended series of experiments had been previously made under the same boiler with coal as a fuel made it possible to secure comparative results as to the relative economic and practical values of the two combustibles. The bureau hopes within a few months to have the complete report of the board ready for distribution, although the labor involved in the preparation of the report is very great. By reason of the inadequate complement of officers available at the bureau for general duty, the members of the liquid fuel board have been unable to give all their time to the preparation of the final report, and as a consequence there has been resulting delay in its preparation. The bureau would call attention to the fact that through the liberality of individuals, combined with the appropriation available for conducting experimental work, probably over \$200,000 was expended in carrying on these tests.

The report of the Liquid Fuel Board when published will be of inestimable benefit to the manufacturing, maritime and naval world, and will show the far reaching benefit of careful, conscientious and extended experimental investigation. The demand for the preliminary report of the Liquid Fuel Board and the extended and favorable notice of the work of the bureau in the investigation of the liquid fuel problem clearly shows how appreciative the country at large is of scientific investigation conducted under Government auspices. Tests were not only made with the Texas and California products, but practically every form of burner illustrating a distinct design or principle was experimented with. It is only by reason of the fact that there were urgent demands for the services of the members of the Liquid Fuel Board, as well as for the service of the torpedo boat "Rodgers," that had been kindly placed at the disposal of the bureau by the Bureau of Navigation, that the tests were discontinued. Neither in extent nor in character have these tests been equaled, either at home or abroad, and the bureau feels assured that when the results of the experiments are made known the necessity and advisability of conducting extended investigation in other directions will be made manifest.

Inspection of Material.

Admiral Rae makes an important recommendation with regard to the work of inspecting material, suggesting the detail of junior line officers as assistants to the naval inspectors of material. He says:

There has been a gratifying increase in the total of material inspected. By promptly shifting the assistant inspectors from district to district as the work in the various districts fell off or increased, the bureau has been able to handle the increased volume of work without serious complaint of delay caused by inspection requirements, and without an increase in the force of assistant inspectors. The bureau regrets that one inspection district is now without a resident naval inspector, the district being temporarily in charge of the naval inspector of an adjoining district, whose time should be entirely taken up by the important work of his own district. Another important inspection district shares the time of the naval inspector with two shipbuilding yards doing work for the Government, where the naval inspector of material is also the inspector of machinery. The bureau again earnestly requests the detail of junior line officers as assistants to the naval inspectors of material, in order that the training that they would receive may fit them for the important duties of inspectors in charge. The important work of following through every process the making of condenser tubes, boiler tubes, boiler plates, steel castings and steel forgings for machinery should always be in the hands of those most interested in getting the very best results in the finished product.

The estimates submitted by Admiral Rae for appropriations to be made for the coming fiscal year aggregate \$3,585,640.

W. L. C.

Indiana's Nameless Industrial Metropolis.

By the pressure of an electric button, in the presence of 3000 people, at Indiana Harbor, Ind., October 24, Governor Durbin started dredges to work on the first section of the deep water way canal, which will ultimately extend from Lake Michigan to a point on the Calumet River. It will be lined with coal, ore, lumber and general docks. The first section is 1 1-3 miles long, extending from the lake to the Elgin, Joliet & Eastern tracks. As soon as it is finished, work will be pushed with vigor on the second section. The canal will be 21 feet deep and 200 feet wide, permitting even the largest lake vessels to navigate it without the use of tugs. The contract is in the hands of the Great Lakes Dredging Company and involves an expenditure of \$252,000. The leading trunk railway lines entering Chicago, which will cross the canal, have agreed to erect bascule bridges at a cost of \$250,000. Three hundred thousand dollars have already been expended in bridging and docking the harbor.

The East Chicago Company, into which have been merged the several companies that formerly owned the greater part of the land at East Chicago and Indiana Harbor, are pushing the development work in this territory with the utmost vigor. It is their prediction and their hope that a city will be established here that will become the metropolis of Indiana. In our issue of April 26 we gave a list of 21 large industries representing an aggregate investment of \$4,885,000 and employing 5070 men. Since that time the following new plants have been added in this territory: Illinois Steel Company's cement works; American Steel foundries, moving from Fifty-ninth and Wallace streets, Chicago; Standard Forgings Company, a new industry; Ward Railway Supply Company; Continental Chain Company, and the Ward-Dickey Steel Company, all new industries. The last named company will manufacture planished steel by a new process.

The East Chicago Company are rapidly pushing the work of macadamizing roads, laying sewers and water mains and building hundreds of residences and cottages for sale or rent to employees of the industries which are gathering about that point. There seems to be no difficulty in finding occupants for residences as fast as they are finished. In fact the demand for homes in this territory is greater than the supply. While the topography of the country is dead level, the greater part of the land being reclaimed from swamps, the system of grading and sewerage which is being followed will overcome natural disadvantages. Every home has from 50 to 100 feet frontage of land belonging to it, the streets are broad and parkways are frequent. Schools, churches and an opera house are already built or building, and every preparation is being made to take care of the large population which the company believe they will secure.

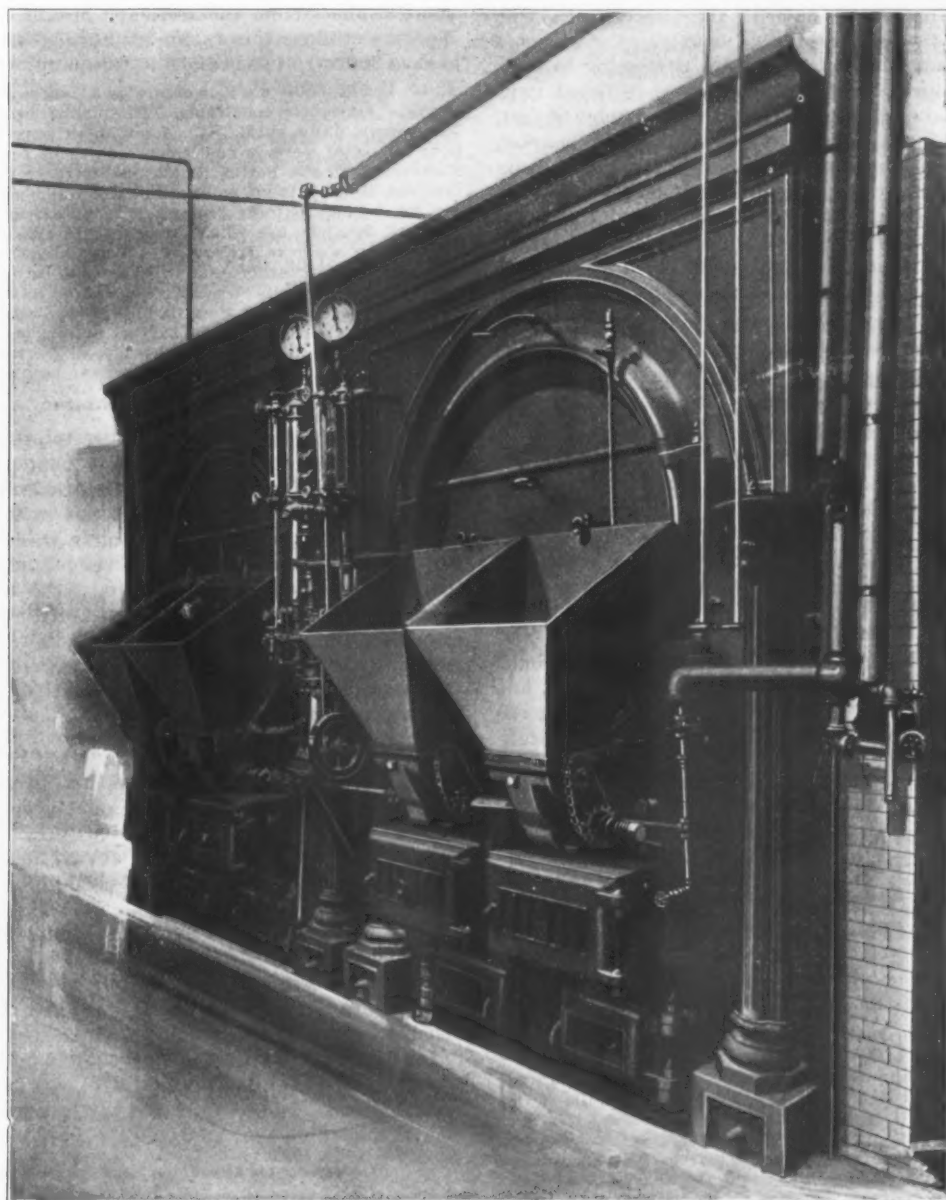
Accessibility, both by water and rail, for incoming and outgoing freight; the avoidance of the expense and delays incident to railroad switching and tug hire, now so burdensome in the city of Chicago; the plan of giving workmen opportunity to buy their own homes at reasonable price; the advantage of securing Chicago rail and water rates on raw materials and fuels and of shipping finished products at the Chicago rates, and the removal of workmen from the demoralizing influences of Chicago are all contributing to the success of the East Chicago Company in inducing the removal of industries from Chicago and other great cities to their new properties. The new city has not yet been named, though "Indiana Harbor," "Indiana City" and "Calumet" have been suggested.

The Treasury Department has issued drawback regulations covering the exportation of refrigerating machines and oil and gas engines manufactured by the De La Vergne Refrigerating Machine Company of New York, in part with the use of imported steel crank shafts, connecting rods and piston rods. In liquidation, the weight of the imported steel forgings which may be taken as the basis for the allowance of drawback may equal the net weight of the imported material in the articles exported, as declared in the drawback entry.

The Little Giant Mechanical Stoker.

The Chicago Pneumatic Tool Company, Chicago, are placing on the market a new stoker which they term the Little Giant. They claim for this stoker that it can be attached to any boiler in about eight hours' time, without drawing the fires, and detached in one hour's time; also that while it is applicable to the largest units, it possesses advantages over all other stokers in its economical and practical operation in connection with small boiler plants. A feature of the stoker to which attention is called is that the fuel is automatically sprayed, as it were, over the bed of the fire by means of a steam

grate generate as intense a fire as the center, giving the operator an intense luminous flame, evenly distributed over the grate surface. Complete combustion is claimed even on the cheapest grades of fuel, any size of coal being adapted to this stoker, from that which will pass through an ordinary 1¼-inch mesh screen down to the smallest size of slack. Owing to the simplicity of this Little Giant stoker, its manufacturers are placing it on the market at about one-half the cost of the ordinary stoker. Several of these stokers are now in operation in plants in Chicago, some of the older types having a record of more than a year's continuous operation. The only part of the stoker, it is claimed, that is likely to



THE LITTLE GIANT MECHANICAL STOKER.

jet, resulting, it is said, in rapid and complete combustion, and practically solving the smoke problem.

The fuel is dumped into the hoppers either by hand or by mechanical means from overhead bins, and is fed downward and forward by means of a cogged wheel at the foot of each hopper, acting on the principle of an endless chain bucket and regulating the flow as desired. From this cogged wheel the fuel passes onto a slowly oscillating spreader or chute, from which it is forced in a thin stream evenly divided over the surface of the grate by means of a steam jet. This steam jet or spreader swings slowly backward and forward over the entire grate area. The cogged wheels and spreader are actuated by a jet of steam. It is claimed that by means of this system of spreading fuel the utmost corners of the

grate generate as intense a fire as the center, giving the operator an intense luminous flame, evenly distributed over the grate surface. Complete combustion is claimed even on the cheapest grades of fuel, any size of coal being adapted to this stoker, from that which will pass through an ordinary 1¼-inch mesh screen down to the smallest size of slack. Owing to the simplicity of this Little Giant stoker, its manufacturers are placing it on the market at about one-half the cost of the ordinary stoker. Several of these stokers are now in operation in plants in Chicago, some of the older types having a record of more than a year's continuous operation. The only part of the stoker, it is claimed, that is likely to

involve expense for repairs is the cast iron spreader, which can be replaced at a cost of 30 cents each when burned out, the fireman placing the new spreader with a shovel without banking his fires.

The Chicago Pneumatic Tool Company have just completed the equipment of a plant at Jefferson and Clinton streets, Chicago, for the manufacture of this stoker.

It is reported that the north tube of the Hudson River tunnel from New York to Jersey City is now very nearly completed, considerably less than 800 feet remaining to be traversed by the shield working from the Jersey City end. The south tube is not so far along, but work is being pushed from both ends.

Notes from Great Britain.

The Markets.

LONDON, October 24, 1903.—Autumn trade continues dull, and quotations are nominal. That practically sums up the situation this week. Recent signs of weakness, upon which I have commented, seem to spread rather than contract. Oddly enough, the make of pig iron seems normal, and stocks are not accumulating. It is thought that this is due to the superior demand for foundry iron, to which furnaces have been largely turned. In the finished iron section marked bars continue the even tenor of their way, and the best makers among the unmarked bars are also doing fairly well. But this is largely because they succeed in competition with the smaller men, who are feeling the present situation acutely.

German contracts that fall in are now going to British makers, which shows either slackness in Great Britain or improved conditions in Germany. In point of fact, both sides of the equation exist. The Belgian market, helped by the improvement in Germany, but keenly anxious as to an American invasion, maintains itself in bare steadiness. Latest reports from Germany point to a period of trade activity in the iron and steel departments, so that just at the moment we are not troubled either with American, German or Belgian competition to any appreciable extent.

Farewell to the Puddling Furnace.

A portentous announcement has been going the rounds this week to the effect that several of the South Staffordshire firms are closing their puddling furnaces with a view of substituting steel for iron in the manufacture of sheets for galvanizing and other purposes. This information seems somewhat belated. Roughly speaking, about 80 per cent. of the sheets now turned out are of steel, the puddled iron having been discarded on the ground of cheaper production. In part, the material comes from the north of England and South Wales, but the bulk is imported largely from Germany. The steel has the disadvantage of oxidizing more rapidly than the iron, should there be any defect for the atmosphere to play upon, but it gives a fine surface, and so facilitates the coating operation of the spelter bath. Sometimes, when the sheets are required for use abroad, the climatic conditions are such as to make iron the more economical investment, and the contracting party will specify for goods of this class, and this is practically all that keeps the galvanized iron sheet trade from total extinction.

Belgian and British Structural Iron.

The following extract from the *Egyptian Gazette* of October 5, having reference to tenders for the extension of the roof of the Cairo railway station, is of unusual interest and significance:

Copies of the specifications and plans were sent to 33 well-known firms. It may be of interest to give their nationalities—i.e., British, eight; French, six; American, five; Italian, three; German, two. The constructors of the roof, Dayde Pille et C^{ie} of Paris were invited to tender but sent in no offer. No offer came in from America. Only three British firms tendered, and of the remaining eleven offers, six were from Belgium. These offers were very instructive in view of the charge often made against the State Railway Administration of giving an unfair preference to non-British firms, though a mixed administration could hardly be expected to get all its material from England. Here are the figures, which are certainly extraordinary: Highest British offer, £16,144; lowest British offer, £12,567; average, £14,042. Average time specified for the work, less the erection, eight months. Highest Belgian offer, £9,852; lowest Belgian offer, £7,715; average, £8,376. Average time specified for the whole work, six months. Can it be wondered at that the administration, which, as we know, is not overwhelmed with wealth, took the lowest Belgian offer—viz., that of Beume & Marpon? What can be the explanation of the enormous difference of £4,852 between the lowest British and the lowest Belgian offers? The British work may be a little better, but the Belgian firm are well known, and the difference in the quality of the work can hardly be commensurate with the difference between the offers.

Lancashire Boiler Makers and Their Plates

The Lancashire boiler makers are contemplating the establishment of steel works for the purpose of supplying themselves with boiler plates. The reason assigned is that the prices charged the boiler makers by the associated steel makers are relatively much higher than the prices

at which plates of a similar quality are supplied for other purposes. With regard to the proposed standardization of the structural parts of Lancashire boilers, it is understood that there is substantial agreement on the main points between the committee of the Manchester engineering employers and the boiler insurance companies, and it is hoped that the Standardization Committee's proposals will soon be brought into a sufficiently definite form to be submitted to a representative committee of the boiler makers, with a view to their general adoption.

Lockout of Metal Workers in Germany.

It is worth watching labor movements to understand accurately the state of trade in any country. The following letter, received by the British Federation of Trade Unions from the secretary of the German Metal Workers' Union, throws an interesting side light upon present industrial conditions in Germany:

In Berlin 3500 metal workers and braziers have begun a struggle for better conditions. Their chief demands are: (1) Nine hours' daily work. (2) A minimum wage of 6 pence per hour for metal workers and 5 pence per hour for braziers. The Federation of the Berlin Employers of these trades has now resolved, if work is not unconditionally resumed before September 28, to lock out on September 30 the locksmiths, turners, grinders, &c., who are still at work—about 12,000 in all. From information we have received the manufacturers are trying to get their most pressing orders carried out in other towns, and partly abroad as well. We therefore wish to inform those organizations connected with these industries of these facts, so that they may prevent this being carried out. The German Metal Workers' Union would like, if possible, to learn to what extent the above intentions of the employers have been carried out.

The Naval Programme.

It has leaked out that the Admiralty proposes to spend a specially large sum on the navy next year. Several large battle ships of a new class are intended to be laid down, with three or four cruisers of exceptional speed, and the better provision of the navy will involve a distinct increase in expenditure. Present indications point to an increased expenditure, as compared with 1903. Of course what the Admiralty proposes oftentimes the Cabinet disposes. But there can be no doubt that, so far as the Admiralty is concerned, it will do its best to push through the largest possible estimates compatible with Parliamentary consent.

Foreign Steel Work and a Great London Bridge.

This week a most interesting discussion took place at the London County Council on the tenders for steel work for the superstructure of the Vauxhall Bridge. The Council have always held out against the cry that tenders for materials should be open only to Englishmen. Their ground has been that the greater openness militates against any tendency to the formation of "rings," and to-day they could fairly justify their policy. The Britons have certainly not been shouldered out, for nearly all the tenders were from British firms, and it was notable that one firm which tendered both for foreign steel and for British steel showed only a difference of £4000 odd in favor of foreign steel on a tender of more than £130,000. The contract ultimately went to a London firm at something over £140,000.

Dumping in the Iron and Steel Trades.

The Prime Minister's essay on Insular Free Trade, full particulars of which have appeared in *The Iron Age*, is being slowly dissected by interested parties. The iron and steel sections who benefit by cheap imported iron and steel material are not slow to state their case. It may be interesting to state the arguments used in this connection.

"Dumped" material is material which has enabled us to do more than hold our own in certain markets against even our strongest commercial rivals. Many of our shipbuilders, for instance, have purchased large lots of German ship plates, which have been worked up in British yards by British labor into British ships, to say nothing of the vessels so constructed for foreign owners. The result is, in fact, that owing to our being the cheapest builders of vessels, through being able to select and to buy in the cheapest market, orders have come to our yards which would otherwise have provided employment for foreign shipwrights and have enabled foreign nations to build up an industry in which at present we are

supreme among nations, through our ability to select our market and avail ourselves of cheap supplies.

A similar position obtains if we consider such "dumped" material as steel bars, billets, slabs and so forth. For the production of tin plate steel has to be purchased, usually in the form of bars or billets, and these are rolled down by the tinplate makers. The makers in Wales can produce tin plate more cheaply than in any country in the world, and she far more than holds her own with the United States and Germany. Clap a duty on foreign bars and billets, and raise the cost of the manufactured tin plate, and Germany and America would quickly make their presence felt. America to this day buys quantities of tin plate here because we can produce far more cheaply than they can themselves.

Again, take the galvanized sheet trade. Nobody complains that spelter is "dumped" here, although it is almost exclusively a Belgian and German product. What would be the result of a duty being placed upon spelter and steel? It would certainly ruin our galvanized sheet trade. Practically all the sheets made here are coated with foreign spelter, and a considerable proportion of the steel used has lately been of foreign manufacture. What country can effectively compete with us either in the home or export market in galvanized sheets. There is none—the reason being that the manufacturer who can buy cheaply can sell cheaply, and can thus hold his markets.

The cheap German steel which has come to this country has, of course, displaced a certain amount of employment; but there is another aspect of the case deserving of consideration. Who buys this "dumped" iron and steel? British merchants and manufacturers. The merchants buy it to sell again at a profit; the manufacturers because, without it, they could not compete so well. How is the metal brought here? By steamer usually, a British vessel or one chartered by a British firm, who presumably make a profit on the transaction. If a British vessel, then, in part at least, the crew are British. The cargoes are discharged by British laborers and a British railway carries the material in its raw condition to British works for manufacture, and takes it back again to the port, where it goes through all the usual processes, each of which carries a profit to somebody, and, eventually, in a ship probably British owned or chartered, it finds its way to the foreign market.

British Exports of Tin Plates.

Apropos of the arguments stated above as to the advantage gained by the South Wales tin plate industry in purchasing cheap steel from abroad, it is of importance to note what changes have taken place during recent years in the British export tin plate trade, largely in consequence of the McKinley tariff. Here are the figures:

	To U. S. A.	To other countries.	Total.
Average of 1887-90 (four years before McKinley Tariff) ..	£4,278,667	£1,403,974	£5,683,641
Average of 1892-93 (two years of operation of McKinley Tariff)	3,527,568	1,633,190	5,160,758
Average of 1895-96 (two years of operation of Wilson Tar- iff)	1,927,572	1,710,032	3,637,604
Average of 1898-01 (four years of Dingley Tariff)	806,600	2,591,794	3,398,394
For the year 1902 (Dingley Tariff still in force)	887,432	3,445,734	4,333,166

Nineteen hundred and three, so far, is even better. The figures speak for themselves, as also these:

	1895-6.	1898-01.	1902.
Average number of tin plate mills working in Great Britain	318	358	397

Nor do I think that these figures overstate the case in favor of free imports, so far as they affect the export tin plate trade. After the Dingley tariff came into operation the South Wales tin plate trade was not only hard hit in the sense of business losses, but up to this heavy tariff the business had been managed in the main very incompetently. Sons had come into possession of their father's businesses without adequate training, and the American connection was looked upon as a permanent asset. The most important result of the Dingley tariff was to impress upon tin plate manufacturers the importance of fully mastering not only the technique of their

industry but all the commercial problems associated therewith. New markets and the best way of conquering them had to be discovered. Thus it will be seen that, although apparently the business had received a knock down blow, it has retained its vitality, and although it is as yet a long way behind the sum total of the trade done prior to the Dingley tariff, yet the energy exhibited in capturing new markets is a monument to the industry of those concerned.

S. G. H.

Scherzer Rolling Lift Bridges.

The Scherzer rolling lift bridges recently completed at State street, Randolph street, Canal street and Main street, Chicago, where they replaced swing bridges, have been so satisfactory that three additional Scherzer bridges have been ordered by the Sanitary District of Chicago for Dearborn street, Harrison street and Twenty-second street to replace swing bridges. The plans of these bridges are nearing completion, and bids for construction will shortly be called for; also bids for the construction of a bridge of the same type at Polk street, for which plans have been completed for some time. The work of construction on the Scherzer bridges at Eighteenth street and Loomis street is progressing rapidly. All these bridges will give clear channels for navigation 140 feet wide, which will enable the largest lake vessels to reach the numerous railroad terminals, warehouses, elevators and manufactories located along the Chicago River, which, with its navigable branches, ramifies through the city. The rapid, direct and economical interchange of large cargoes made possible by these improvements will enable Chicago to maintain her advanced position as a manufacturing and transportation center.

The work of removing artificial obstructions to navigation by substituting bascule bridges for swing bridges is also progressing rapidly at many other railroad centers, notably Cleveland, Ohio, where three Scherzer bridges have already been completed to take the place of swing bridges. A fourth is now under construction for the Newburgh & South Shore Railway Company across the Cuyahoga River. This will be a long span, double track, single leaf bridge designed for the heaviest railroad loadings. A large highway bridge of the Scherzer type is nearing completion at South Michigan street, Buffalo, where it replaces a swing bridge. The first one of two double track Scherzer bridges, under construction across Newark Bay for the Central Railroad of New Jersey, is nearing completion, and will be placed in service within several months. The substructure of the long span Scherzer bridge at the mouth of Newtown Creek, Brooklyn, is nearly completed, and the erection of the steel superstructure, which has been manufactured, will commence soon. The four-track Scherzer bridge for the New York, New Haven & Hartford Railroad Company at Bridgeport, Conn., is completed, and is expected to be placed in service within a few weeks. The contract for the construction of the Scherzer bridge at Saginaw, Mich., has been awarded, and the work of building has commenced.

All of the above and other Scherzer rolling lift bridges replace swing bridges, many of which have only been in service for a few years, but were so obstructive to navigation and so inadequate to the requirements of railroad, street and highway traffic that it was necessary to replace them with more modern structures. The new plans under way for the removal of swing bridges and replacing them by Scherzer bridges call for a large tonnage of structural steel, counterweights and machinery in the early future.

The Zenith Furnace Company, West Duluth, Minn., have under construction a 600-foot coal dock equipped with Mead hoists, cable road and traveling bridge, with storage capacity of 150,000 tons of coal and 40,000 tons stone and a pocket capacity of 10,000 tons. They are also building 50 by-product coke ovens of the Otto-Hoffman type, capacity 250 tons of coke a day, with accompanying buildings, such as condenser house, gas holders, &c. The furnace has been equipped with a third blowing engine, and is to be relined throughout.

The Union Station at Washington.

D. H. Burnham of Chicago is architect for the new Union Railway station at Washington, D. C., which, when completed, will be one of the handsomest in the world. The station itself will cost \$4,000,000 and the site, tunneling, &c., will cost \$10,000,000 additional. The station will face Massachusetts avenue, $\frac{1}{2}$ mile north of the capitol. Between Massachusetts avenue and the station will be a plaza, 500 x 1000 feet. The building itself will have 620 feet frontage, with train sheds running back 1000 feet or more. The station will be approached by a tunnel from the southern roads, which will run under the city of Washington as well as by the present Baltimore & Ohio tunnel. Such portions of the trackage

their general policy of retrenchment will also abandon their publication department. Albert L. Butler, the editor and manager of this department, will retire from the service of the company November 15. Mr. Butler organized the company's export and publication departments, and, besides being a salesman, is the author of their catalogues and advertisements. He has also compiled several works on the treatment of steel, a subject with which he is familiar. His address until February 1, we are informed, will be Hammononton, N. J.

The New Queen City Shaper.

The Queen City Machine Tool Company of Cincinnati have recently designed a 16-inch crank shaper, which is

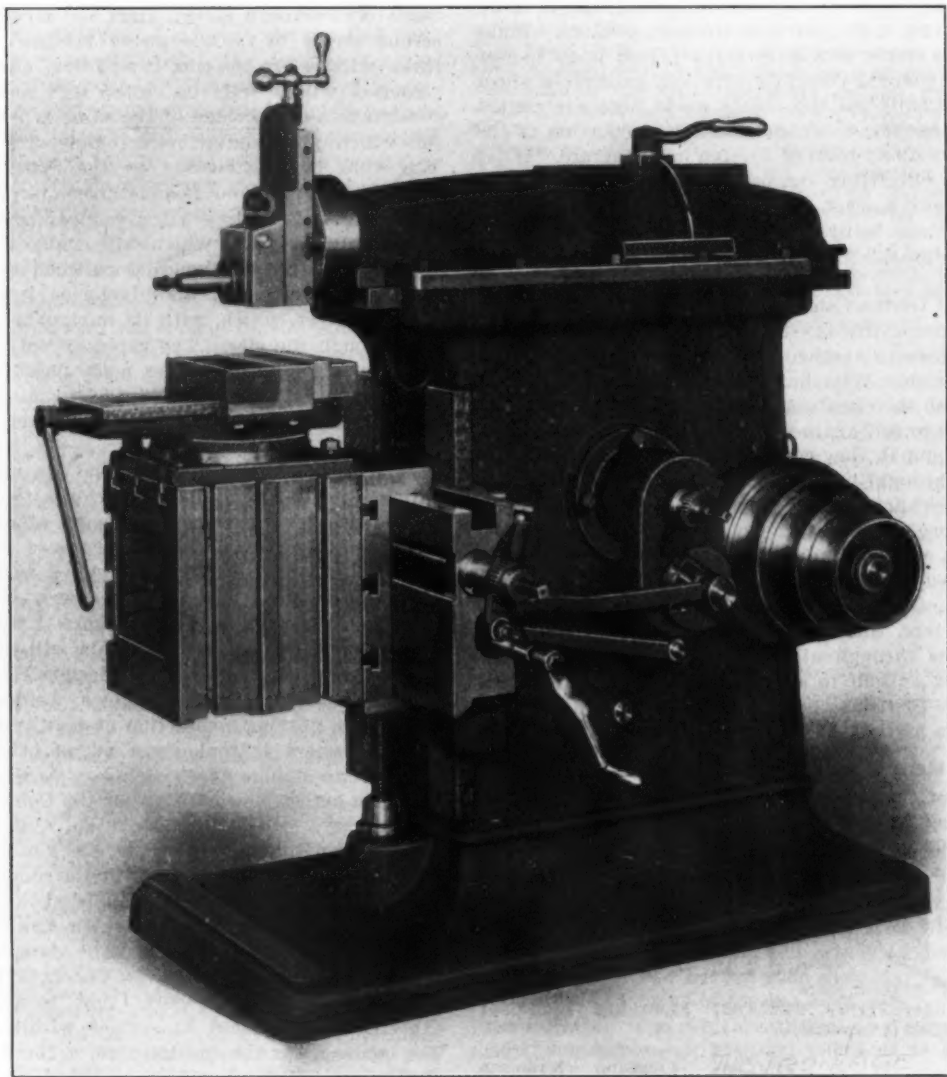


Fig. 1.—The New Queen City Shaper, Side View.

as are on the surface will be walled in by high cement walls. The main building will have a barred vaulted roof and will be highly ornamental in its every detail. Instead of one great train shed there will be a series of individual train sheds spanning each track just wide enough to overlap the trains. A feature of the building will be a suite arranged for the exclusive use of the President of the United States and for distinguished guests. The following contracts have been awarded: Thompson-Starrett Company, New York, granite and masonry; American Bridge Company, steel construction; Meader Furniture Company, Cincinnati, interior wood work; McNulty Brothers, Chicago, plastering, and the Chicago Ornamental Iron Company, ornamental iron work.

The Crucible Steel Company of America have decided to discontinue the publication of their bi-monthly journal, "Sparks from the Anvil," and in accordance with

made both single and back geared. The latter construction is shown in the sectional view, Fig. 3, in which the drive is through the gears D and E and F and G. The gears E F are mounted upon the same sleeve, splined to the shaft B, so that it is impossible to bring one pair into engagement before the other pair has been released. The ratio of gearing, about 20 to 1, is very much higher than usual, the general ratio on 16-inch back geared shapers being about 13 to 1. All the gears are cut from solid steel.

The ram construction is particularly noteworthy, since it becomes heavier as the tool leaves the column, thus bringing the stiffest part of the ram in use at the time when the leverage is greatest and almost, if not quite, overcoming all tendency to springing. The rail is very heavy, well ribbed and has wide bearings. The horizontal traverse screw is provided with a graduated collar indicating thousandths of an inch. The vertical adjust-

ment is obtained by means of bevel gears, which are protected from chips and dirt. The head swivels to any angle and is graduated; the locking device is strong and conveniently placed, and the down feed screw is fur-

vertically, and can be readily detached from the apron. The vise has a circular graduated base, and when swiveled to any angle can be firmly held against movement. All flat bearings are scraped to a standard surface plate, and all wearing surfaces are gibbed to permit of close adjustment for wear. The machine throughout is of very heavy construction and is intended for severe duty.

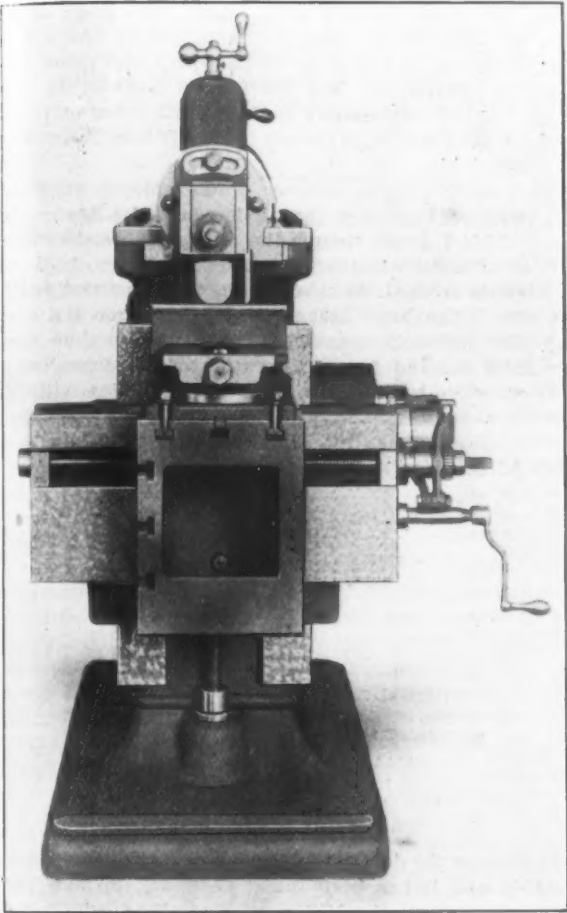


Fig. 2.—Front View.

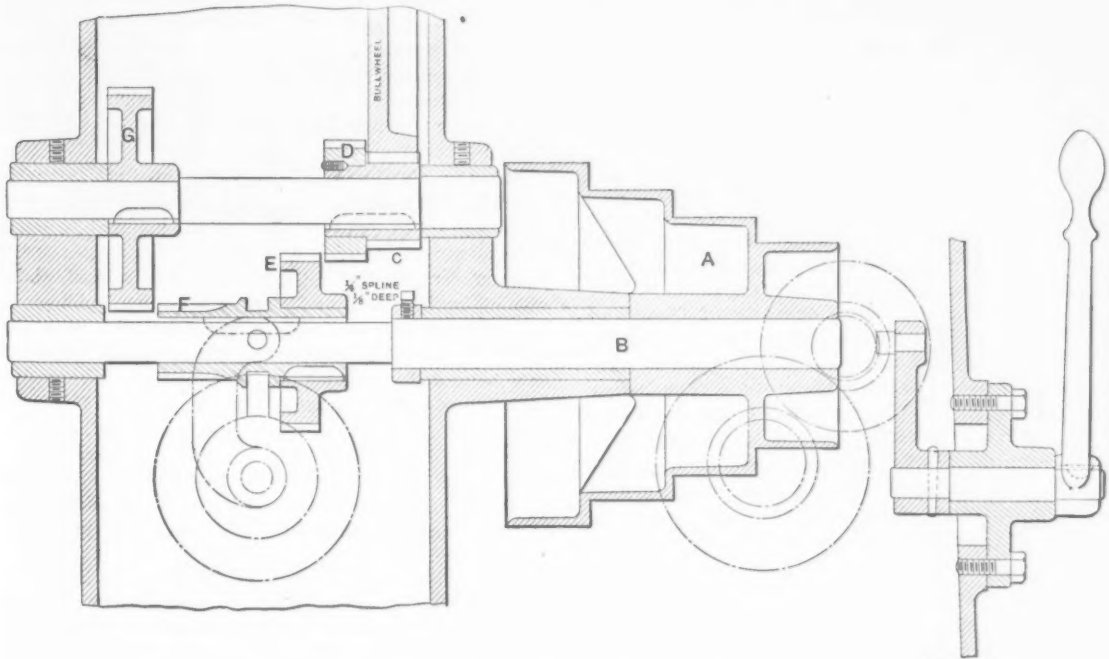


Fig. 3.—Section through Back Gear.

THE NEW QUEEN CITY SHAPER.

ished with a graduated collar reading thousandths of inch.
The table is of the box form, T-slotted on the top and sides, has a V for holding shafts and similar work

to the success of the Kansas plants. Cement and gypsum plaster mills constitute one of the largest industries of the gas belt of Kansas, the plant at Iola being, it is claimed, one of the largest in the country.

In the Natural Gas Belt of Kansas.

Prof. G. P. Grimsley, State Geologist and secretary of the Kansas Academy of Science, has issued an official pamphlet, entitled "Oil, Gas and Glass, Chemical Industries and Minerals of Kansas." The pamphlet is illustrated with diagrams showing the belts in which the principal deposits of oil, gas, bituminous coal, lead, zinc, gypsum and salt are found. Oil and gas are distributed through nine counties in the southeastern part of the State, running southward into Indian Territory. Analyses of the gas show that it averages 94½ per cent in marsh gas (CH₄) with entire freedom from sulphur and sulphureted hydrogen, and less than 1 per cent. of non-combustible impurities. Strong claims are also made for the quality of the oil produced by the 700 wells now in operation.

The following values are given of the annual productions in the State of the industries named:

Coal mines.....	\$6,799,563
Gas wells.....	800,000
Oil wells.....	360,357
Salt wells.....	762,609
Gypsum plaster mills.....	209,172
Hydraulic cement mills.....	1,558,490
Sandstone quarries.....	529,157
Brick yards.....	1,200,000
Lead and zinc mines.....	1,403,724

Inasmuch as natural gas is the ideal fuel for fluxing the materials that go into the manufacture of glass, the leading glass works of this country are now located in the natural gas belts of Indiana and Ohio. The rapidly decreasing supply of natural gas in these States and the presence in the natural gas belt of Kansas of silica sand, salt and lime have already led to the removal of several glass works to Kansas. Others will follow in proportion

The Scotch Iron and Steel Situation.

GLASGOW, October 23, 1903.—Reports have been current here of sales of Alabama pig iron to come forward from your side during the fall, but I have been unable to verify the sales, although a parcel of 1000 tons of American steel has been sold to Swansea. The American quotation for Southern foundry iron seems fully \$1 a ton too high to lay down on this side in competition with Cleveland iron, which is selling at 43 shillings 6 pence to 43 shillings 9 pence, Middlesbrough, for No. 3, 43 shillings 6 pence to 43 shillings 7½ pence for No. 4 and 43 shillings 3 pence to 43 shillings 6 pence for gray forge.

The Pig Iron Market.

There is certainly a weakness in hematite qualities, Middlesbrough make selling at 52 shillings 9 pence for mixed numbers, Scotch at 58 shillings, delivered to Scotch steel works, and Cumberland warrant iron at 54 shillings 6 pence. But this is due to the dullness in the steel trade and the consequent reduced consumption. It is noteworthy that while there are only some 13,000 tons of hematite iron in the Cumberland warrant stores, the makers of that district hold about 100,000 tons of it unsold in their yards. One company is credited with holding no less than 50,000 tons. It is on account of these heavy furnace stocks that several hematite furnaces have been blown out in Cumberland and Lancashire. The shipments of iron and steel from the Cumberland ports for the year up to the end of last week were 722,915 tons, a decrease of 786,491 tons.

In the Glasgow warrant market the transactions are necessarily small, because the Cleveland warrant stock is now down to about 115,000 tons and the Glasgow stock to about 10,800 tons. Dealings are confined to Cleveland warrants, for hardly a warrant for Scotch iron now changes hands. Yet, small as are the stocks, both stores are being drawn upon week by week, and are being steadily reduced to still smaller dimensions. This is because both Scotch and Cleveland smelters have been so full of orders, both for home and export, that they could not always promptly meet demands for delivery, and so the stores had to be resorted to; but I think there is no doubt that smelters are not so full of orders as they were, and that they are accepting less than the current quotations. These quotations are now as undernoted in the market, not as quoted by each maker individually:

No. 1.		No. 3.	
Coltness, f.a.s., Glasgow...	73 6	Eglinton, f.a.s., Ardrossan	55 0
Gartsherrie, f.a.s., Glasgow...	62 0	Glengarnock, f.a.s., Ard-	
Summerlee, f.a.s., Glasgow...	65 0	rossan	61 0
Shotts, f.a.s., Glasgow...	65 0	Clyde, f.a.s., Glasgow...	61 6
Calder, f.a.s., Glasgow...	62 6	Carnbroe, f.a.s., Glasgow...	56 0
Langloan, f.a.s., Glasgow...	70 6	Wishaw, f.a.s., Glasgow...	55 0
Dalmellington, f.a.s., Ayr...	54 6	G. M. B., f.a.s., Glasgow...	52 6

Any one with a good order in hand need not have much difficulty in buying under these rates.

We are still bringing a large quantity of Cleveland iron, principally foundry, into Scotland for mixing purposes. Up to the end of last week the total was 464,363 tons, an increase of 70,879 tons on the corresponding portion of last year. On the other hand, the shipments of pig iron from Scotland for the same period were 259,704 tons, as against 291,745 tons, a decrease of 32,041 tons. The imports of Cleveland iron will probably soon fall off because, although consumers are taking up their current contracts promptly, few are buying a fresh supply at present.

Finished Products.

Malleable iron is dull, and by malleable iron in this part of the world is meant all sorts of rolled but not cast iron. Last week Scotch makers reduced the prices of bars by 5 shillings per ton. Best Crown bars are now £6 5s. per ton less 5 per cent., but at the reduced price makers are probably doing better than they were before when pig iron was so much higher than it is now. It is probable, nevertheless, that the Scotch makers would not have reduced their prices but for the keen cutting of common bars in England. The reduction has so far had no effect in stimulating new business. Pipe founders are

running full time, and are so well booked ahead that they regard the position with complacency. Locomotive engineers are not so well employed, and as contracts are being worked off a number of men are being discharged. Marine engineers are still feeling the depression in shipbuilding, which is again renewed after a slight improvement. There is a good deal of repair work going on at the shipyards, but the new contracts booked this month have been few, and in some of the yards operations are almost at a standstill. The distribution, however, is very unequal in the shipbuilding trade, for a number of yards are quite busy and have enough booked to keep them busy all winter.

It is said that the number of unemployed shipyard men just now is greater than it has been for five or six years. This I doubt, though the number is considerable. It is so considerable that the members of the A. S. E. have tacitly decided not to renew the wage question again just now. The local branches say that after the new year they will call upon the Executive Council to support their demand for a restoration of the 5 per cent. taken off some months ago, but that I imagine will depend on what the trade prospects are after the new year.

The following are the Middlesbrough quotations for finished iron:

	Per ton.					
	£	s.	d.	£	s.	d.
Bars, common.....	6	7	6 to 6	10	0	0
Bars, best.....	6	17	6 to 7	0	0	0
Bars, best best.....	7	7	6 to 7	10	0	0
Packing iron.....	5	10	0 to 5	12	6	6
Ship plates.....	6	7	6 to 6	10	0	0
Girdler plates.....	6	12	6 to 6	15	0	0
Boiler plates.....	7	7	6 to 7	10	0	0
Angle, tee and bulb iron.....	6	5	0 to 6	7	6	6
Sheets, heavy (singles).....	7	10	0 to 7	12	6	6
Sheets (doubles).....	8	0	0 to 8	2	6	6
Galvanized corrugated sheets, 24 gauge, in bundles	11	0	0 to 11	5	0	0
Rails (light).....	6	2	6 to 6	5	0	0
Rails (heavy).....				5	0	0

The West Coast Trade.

In Barrow the demand for hematite has fallen off considerably and it has been found necessary to blow out another furnace at the Millom works, where, within the last six or eight weeks they have reduced the weekly production by about 2250 tons. Stocks of iron have accumulated at all the iron works which have not steel plants connected with them. The steel trade is busily employed on heavy rails and ship plates, but hoops are quiet and only a moderate business is doing in billets, slabs and tin bars. Merchant steel is quiet. Heavy steel castings are in better demand. Prices are steady, with heavy rails at £5 10s. per ton net, f.o.b., and ship plates at £5 15s. net, f.o.b.

In the Northwest district the business situation is anything but satisfactory, and a pessimistic tone prevails. Consumers buy only as they are compelled to cover requirements. One or two of the smaller forges are fairly well off for orders for the present, but booked under the official basis rates, and only a sluggish business is reported generally, while the larger finished iron works are short of orders. In the steel trade no special new feature can be noted. Throughout the engineering trades the position is unsatisfactory, and the reports from sources representing both employers and workmen are not encouraging as to the future. Not only are there indications of a further decline in trade, but few firms report new work coming forward, and a further considerable increase of unemployed is inevitable before the close of the year.

The Coal Trade.

There is no improvement in the Scotch coal trade, even with the slightly better demand for household coal as winter approaches. Splint coal, which is used both for gas making and for iron smelting, is very plentiful, and is being pressed for sale at 8 shillings 9 pence per ton, f.o.b., which is about 1 shilling 3 pence per ton under the price current at this time last year. Steam coal is also very slow of sale at 8 shillings 9 pence to 9 shillings, f.o.b., which prices compare with 10 shillings to 10 shillings 3 pence a year ago. But a year ago we were having a run of American orders for coal, due to the strike on your side.

A Possible Plate Combination.

There is some prospect of a compact among our makers of boiler and ship steel plates to put an end to the ruinous competition that has marked the trade for some time, especially in boiler plates. The project is to get the competing firms to a conference at which a minimum scale of prices may be fixed. The idea is to fix £6 10s. per ton as the standard price for steel boiler plates, with the usual extras, and also to fix a minimum for ship plates. It will require a good deal of diplomacy to get the rival producers into line, but success is not improbable.

B. T.

The Bates Metal Numbering Machine.

The operation of numbering name plates and metal parts has, until recently, remained a most unsatisfactory one, and the system of employing individual figure stamps and hammer is not only crude, slow and expensive, but errors and irregularities constantly occur and the appearance of the work is far from attractive. The machines here illustrated, built by the Bates Machine Company of 346 Broadway, New York, accomplish the work accurately, and any numbers which skip backward or forward, such as type and voltage numbers, may be impressed upon the parts themselves or upon plates or tags to be attached to them.

The first machine is intended for consecutive numbering upon castings, steel bars and plates, metal tags and the like. It may be operated in any punch, screw or lever press. The shank is made straight or to any taper or length desired. It is set up in the same manner as an ordinary punch, the stroke of the press being carefully adjusted to the depth of the impression required. As the disks revolve the figures are brought into correct alignment, are equally spaced and all are sunk the same depth,

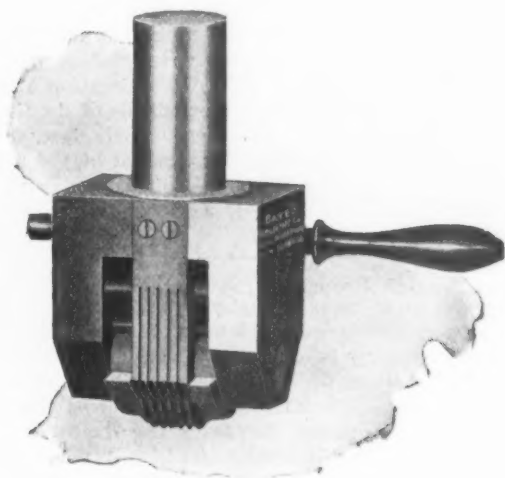


Fig. 1.—Consecutive Numbering.

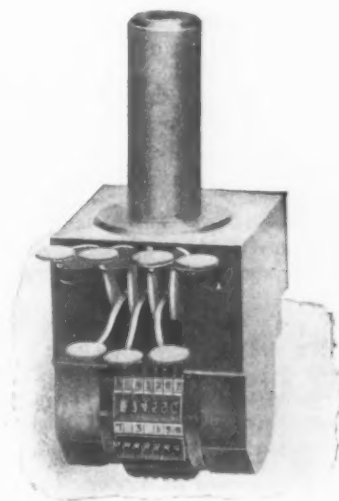


Fig. 2.—Stamping Style, Grade, &c.

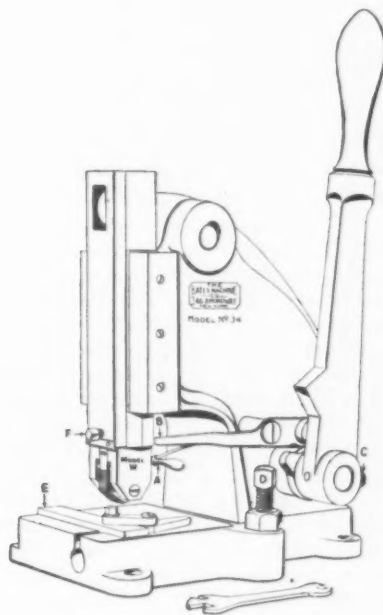


Fig. 3.—Hand Lever Numbering Machine.

THE BATES METAL NUMBERING MACHINE.

thus insuring uniformity. The lever bar may be attached to any stationary part of the press, and the numbers will then advance automatically, in consecutive order with each stroke. The figures and letters are made to any style desired and are cut upon tool steel hardened wheels.

The next device is intended for stamping the style, grade, amperes, voltage and power numbers upon parts of motors, dynamos, electric motors, &c. Any combination of letters and figures may be set—skipping backward or forward—as is required for numbers which do not progress consecutively. Each numbering wheel is provided with a lever, which operates it independently of the others. The ends of these levers form a small keyboard. The figures and letters which are in the stamping position are always shown by the indicators on the front of the wheels just below the keyboard.

In the hand lever bench press, Fig. 3, adjustable gauges

are usually provided, to which the pieces to be numbered are fed. A toggle joint insures maximum power with comparatively slight pressure upon the lever.

The Diamond Wire Company.—There has been organized at Columbus, Ohio, the Diamond Wire Company to develop the diamond mesh wire cloth weaving machine invented by W. W. McCallip, who is well known in con-

nection with his achievements in wire rod rolling. Diamond mesh wire cloth is now made by hand, the disadvantages and high cost of this method being borne in view of the fact that the diamond form of wire cloth is peculiarly adapted for the requirements of architects because of its great strength and its ornamental appearance, and because of the fact that before framing the sections of cloth can be varied in length and width to suit the endless variety of openings required. The McCallip machine, which is the result of study and experiment extending over seven years, is now completed. An experimental machine operated by hand feed has a record of a speed of 20 wires a minute, working on $\frac{3}{4}$ -inch mesh of No. 12 wire, the width of the cloth being 6.5 feet. By hand the same character of work can only be done at the rate of one wire per minute, making cloth 4 feet 8 inches wide.

Navy Yards and Docks.

Increased Appropriations Needed for Important Improvements.

WASHINGTON, D. C., November 3, 1903.—Admiral M. T. Endicott, Chief of the Bureau of Yards and Docks, in the course of his annual report, which has been forwarded to the Secretary of the Navy, urges that Congress be asked to increase materially the appropriation to be disbursed by this bureau in order that land may be purchased for the extension of several of the principal navy yards and modern buildings be erected thereon. The construction work undertaken by the bureau has been delayed, owing to the difficulty in obtaining structural steel, and the progress on the new dry docks now being built by contract has not been altogether satisfactory; but conditions are said to be improving, especially with reference to construction and repair work on the new floating steel docks. Following is an abstract of Admiral Endicott's report:

During the year 71 contracts were made by the bureau, involving obligations amounting to \$7,211,583. The efficiency of the navy yards and stations has been materially increased by the improvements added during the year, although the increase has hardly kept pace with the rapid growth of the navy afloat.

Construction of Dry Docks.

The new dry docks at Portsmouth, Boston and League Island have not progressed in an entirely satisfactory manner, while the one at Mare Island has hardly gone forward at all, owing to the difficulty the contractors experienced in placing a satisfactory cofferdam to exclude the water from the site. At Portsmouth progress has been fair, and, barring accidents, should go forward to completion during the current fiscal year. At Boston fair progress has also been made since the work was taken in hand by the surety on the contractor's bond, August 20, 1902, and at League Island good work has been done under the contract made for completing the work after the original contract was annulled December 29, 1902, and the indications are that the work will be pushed forward to the earliest possible completion. The new dock at Charleston, S. C., has been delayed somewhat, owing to lack of transportation facilities to the yard and other causes, but the contractors are being urged along, and the bureau hopes to secure the completion of this dock within the contract time. The floating steel dock transferred from Havana to Pensacola has been extensively repaired, and will soon be ready to be put in commission. The construction of the steel floating dry dock authorized for the naval station, Cavite, P. I., has commenced under contract, and there is every indication that the progress will be satisfactory, the work being in the hands of the contractors who constructed the steel floating dock now located at the naval station, New Orleans.

At Washington, Key West and New Orleans additional land has been purchased for extending the yards at those points. Several of the yards, especially New York and Norfolk, are becoming congested, owing to their limited area, and some action looking to their relief must soon be taken or their efficiency will be restricted. At the outlying island stations but little has been done by way of permanent improvements pending a determination of the location of the various permanent stations.

The losses by fire during the year have been small to a very gratifying degree, and no serious accidents have occurred involving the lives of workmen or the loss of Government property, excepting an earthquake at Guam, by which considerable damage was done to property.

The bureau's work was delayed to a considerable extent by the extreme difficulty in obtaining structural steel, the condition of the market having been such that the mills would not accept orders for quick delivery. Delay in the preparation of plans and specifications has also been caused by difficulty in securing the services of a sufficient number of competent draftsmen, the general prosperity of the country and the extensive private building operations providing such inducements that the

salaries offered by the Government proved no attraction to first-class men.

Estimates and Recommendations.

The estimates for the navy yards and stations, covering matters under the cognizance of this bureau, to be laid before Congress at its coming session include public works of improvement, \$7,479,874; repairs and preservation, \$500,000; maintenance, \$665,000; pay of men on leave, \$60,000; contingent fund, \$40,000; civil establishment, \$157,884; plans, estimates and specifications for public works, \$185,000; total, \$9,087,758. The appropriations made by the act approved March 3, 1903, for public works, under the cognizance of this bureau, at the navy yards and stations, amounted to \$3,806,440, covering 122 objects.

The improvements being constructed during the current year will add much to the efficiency of the naval establishment ashore, but there yet remain many objects of great importance, some of which are urgently needed. The estimates for the coming fiscal year provide for continuing the work upon the stone and concrete dry docks at Charleston, New York and Norfolk, and upon the steel floating docks at Charleston, New York and Norfolk, and upon the steel floating dock for Cavite. With the exception of the improvement to the water front at the navy yard, New York, these items are the largest in the estimates now being submitted. The estimates for other items of improvement at the various navy yards and stations are individually small in amount, and while they amount to considerable in the aggregate, do not provide for large works of improvement which are desirable, and in some cases much needed. A steel floating dock for the navy yard, Portsmouth, N. H., capable of lifting vessels of 5000 tons, is desirable to replace the old wooden floating dock at that yard, which, while still in service, is old and nearing the end of its life.

The bureau again renews its recommendation made in previous reports that a board of officers be appointed to consider a site for the location of a naval station on the south Pacific Coast, and also its recommendation that the matter of the improvement of the naval station at Pearl Harbor, Hawaii, receive attention. The location and establishment of stations in the other islands of the United States should also be determined at an early date, as improvements are now restricted on account of the uncertainty, and the efficiency of the stations consequently diminished and repair work made more expensive.

W. L. C.

Coen Vessel Propelling System.—C. M. Coen, of Washington, D. C., has organized the Coen Vessel Propelling System Company, of which he is president. The purpose of the company is to exploit a method of screw propulsion for shallow draft vessels for river, canal and similar services. The Coen system involves the construction of a bottomless chamber along the keel of the boat, this chamber being fitted at its highest point with a vacuum chamber, from the top of which the air may be pumped to form a partial vacuum, whose effect shall be to cause the rise of water within the keel chamber, completely filling the latter and extending up into the vacuum chamber. The screw propeller works within the bottomless chamber, its shaft passing through a stuffing box bearing entirely similar to the usual stern bearing of screw propelled vessels. By this method of placing the propeller the latter may be given complete and constant immersion, yet without projection below the keel line. The action of the propeller is to drive the water backward and downward out of the chamber, the displaced water being replaced by other water entering from the forward side. It is stated that this system has been thoroughly tried and that a shipyard for the construction of river steamers will soon be located either at Memphis, Tenn., or Cincinnati, Ohio. Another yard is expected to be located either upon the Hudson River or the Erie Canal for the building of canal boats fitted with this system of propulsion.

As illustrating the importance to German works of the export trade, it may be noted that during the last fiscal year the Hoerde Works exported 150,850 tons of its products out of a total make of 352,035 tons.

The Improved Champion Power Hammer.

Beaudry & Co. of 147 Milk street, Boston, Mass., are building an improved Champion power hammer, of which two views are shown in the accompanying illustrations. One of the special features to which attention is called is the automatic brake, so connected to the operator's treadle as to have practically instantaneous effect in stopping and starting the hammer. The brake is designed to be quite powerful, the shoe A being applied against the flange B of the driving pulley by a leverage of 32 to 1. This flange is $2\frac{1}{4}$ inches in width on the 150-pound size here shown, and the arc of contact of the shoe is about 10 inches. The turned shank of the brake shoe supported within the holder C is slotted at its lower end to receive the cam shaped end of the brake lever D, Fig. 2, which has a slot and pin connection to the operating mechanism at its outer end. The range of vertical movement of the shoe is less than $\frac{1}{8}$ inch, and may be adjusted for wear by means of the set screw at the bottom of the holder C. Depression of the treadle to start the

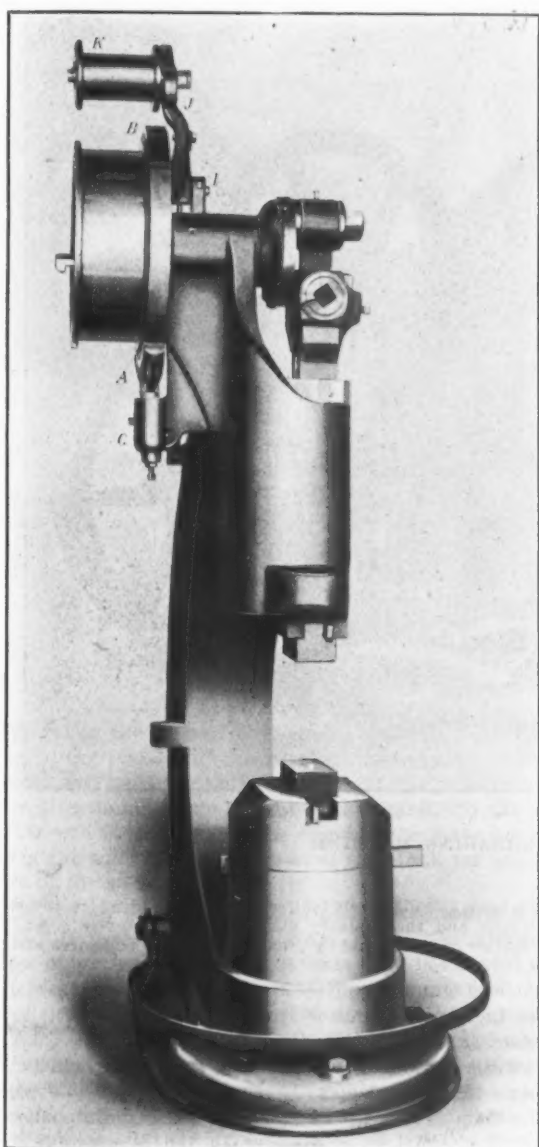


Fig. 1.—Improved Champion Power Hammer.

hammer releases the brake, which is again quickly brought into action by the removal of pressure from the treadle, stopping the hammer and holding it at any desired position.

The idler K is mounted upon a stud secured by a shift nut within a slot 6 inches long in the arm J, thus providing for wide range of adjustment with variations of belt tension. Turnbuckles in the rods E and H permit close relative adjustment of brake, treadle and idler.

The peculiar design of the hammer head and its con-

necting rod is with special reference to elasticity and control of the blow. As shown by the dotted lines in Fig. 2, the steel ram or head is hollow, the interior being shaped to form curved sides concave toward each other. The lower portion of the connecting rod takes the form of a heavy spring whose ends are brought nearly together within the head, where rollers fitted to the spring ends bear with a constantly outward pressure against the curved interior. The tension of the spring arms is such that the head at low speeds will follow very closely the

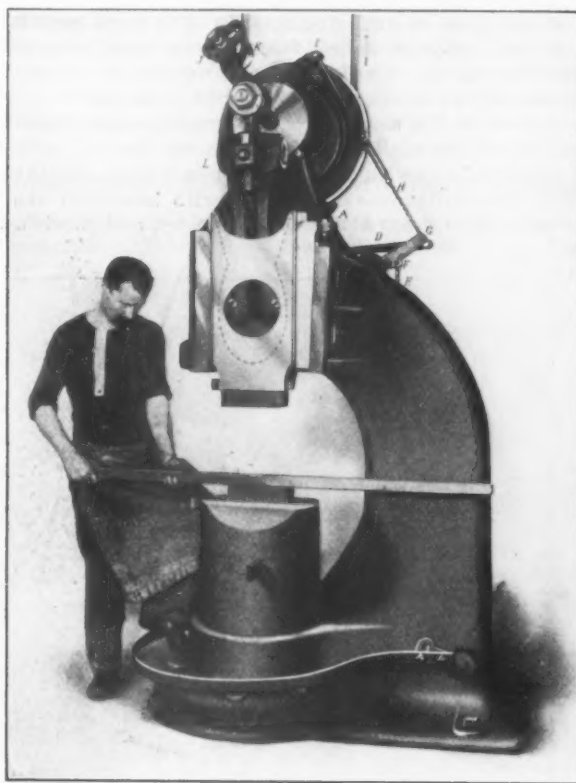


Fig. 2.—Side View of New Champion Hammer.

movement of the connecting rod; for higher speeds the travel of the head when running free will be considerably greater than that of the connecting rod. By this arrangement the ram is allowed considerable freedom of throw, providing for wide differences in thickness of the work for successive blows, as well as enabling the hammer to rebound freely after each blow. It is stated that the energy of the blow is under full control of the operator, who may strike light or heavy blows according to the pressure of his foot upon the treadle. The elasticity of throw of the hammer already mentioned is especially useful in striking alternately upon the edge and flat of a bar. It is stated that a bar $\frac{1}{4}$ inch thick and 5 inches wide may be struck alternately upon edge and flat without necessity for change of adjustment of the hammer mechanism. The ram is, however, adjustable for height above the anvil by alteration of the length of the connecting rod, this being effected by raising or lowering the ram after loosening the set screw through the face of the spring box or head L.

The anvil casting is independent of the frame, the object of this arrangement being, of course, to prevent crystallization and final breakage of the latter. The anvil is fitted with an independent and adjustable shoe die. The frame is offset so as to clear the center line of the ram and anvil, this arrangement allowing the operator to work any length of bar lengthwise as well as crosswise of the dies, as shown in Fig. 2. The crank shaft runs in hard bronze bushings chambered for oil. The crank pin is radially adjustable for varying lengths of stroke. The connecting rod, spring box and ram are of cast steel, while the spring arms are of forged Swedish steel and have hardened tool steel rolls. The ram guides are heavy and are cast solid with the frame, an adjusting wedge gib being provided for taking up wear.

A New Whiting Plate Shear.

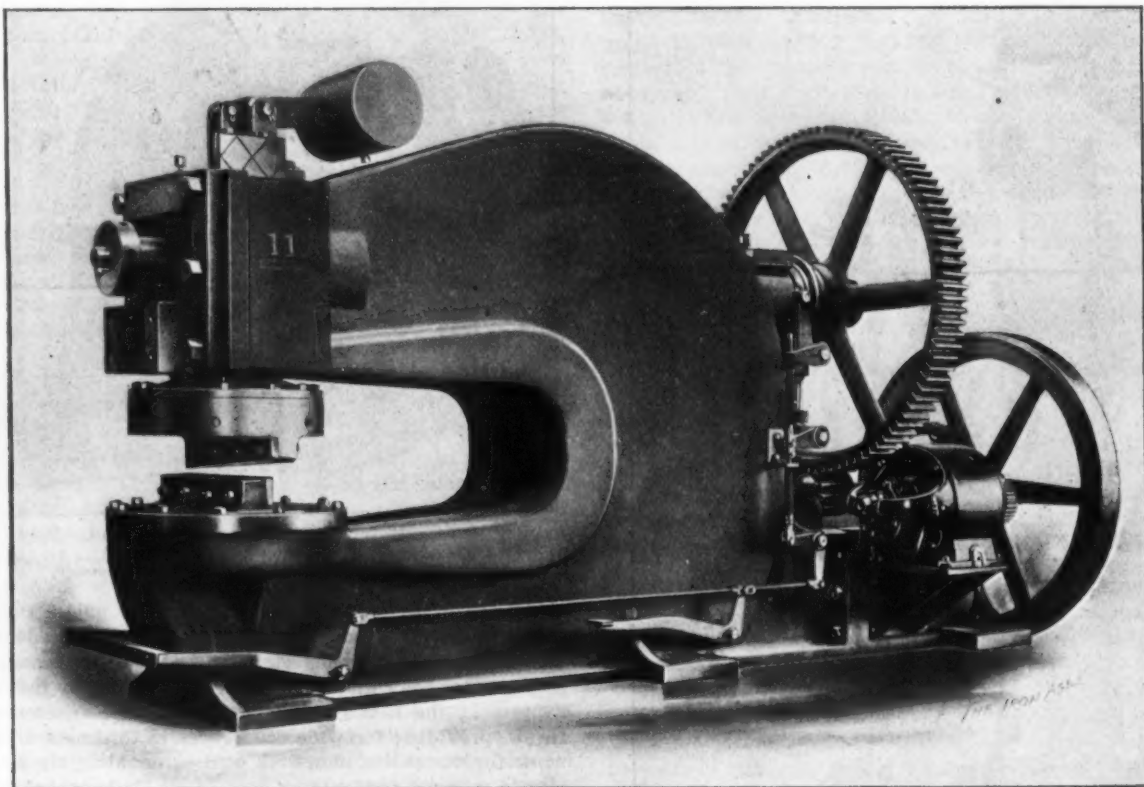
The accompanying engraving represents a new form of gap shear recently brought out by the Geo. Whiting Company, Chicago, Ill. The maker calls attention to certain unique features of the tool, which are expected to appeal to users of steel plates. The machine is designed to do all the work that can be done with the more expensive gate shears, and in addition a great deal of work which cannot be brought within the range of this latter type.

The ram and lower jaw are fitted with shear blocks mounted upon centers arranged to give them positive alignment while providing for revolving them into any desired position. The blocks are so made as to permit the use of the machine not only as a splitting or cross cutting shear, but also, by changes readily made, for cutting at any angle. This feature provides for the cutting of large plates without swinging them around, and also allows the cutting of sketch plates with less waste than is usual. The shear blocks are graduated and furnished

For Mississippi River Improvements.

The Interstate Mississippi River Improvement & Levee Association, which a few days since met at New Orleans in convention, adopted a series of resolutions in favor of Government jurisdiction of levees or adequate appropriations for their speedy construction if Government control is not thought advisable. The convention also indorsed the following resolution respecting the proposed waterway from the great lakes to the gulf, with the Chicago sanitary canal as a part of that project:

Resolved, That this convention, representing the States of the great Mississippi Valley from Duluth to the Gulf of Mexico, gives its unqualified approval to the movement for the construction of a waterway connecting the great lakes with the Mississippi River and the Gulf of Mexico. We recognize the expenditure of \$35,000,000 by the sanitary district of Chicago as a practical demonstration in the furtherance of this project. We express the hope that the Senators and Representatives in Congress of the various States represented in this convention will give their encouragement and assistance to Congressional legislation in favor of the completion of the deep waterway to which the Mississippi Valley



NEW NO. 11 WHITING PLATE SHEARING MACHINE.

with indexes for convenience in setting without loss of time.

The main frame is of the ordinary deep throat type, made extra heavy and designed for the heaviest duty. Bearings for the sliding head are longer than usual and of special design to compensate for the unusual length of the shear blades. The crank shaft is of forged steel of large size and proportioned with due reference to the service for which the machine is intended. The shear is, of course, fitted with the Whiting improved automatic stop clutch, treadles for operating which are placed back of the throat at both sides of the machine as well as in front, so that wide plates need not interfere with the facility of operation.

The No. 11 machine, here illustrated, has 48 inches depth of throat, and will therefore cut to the middle of a plate 8 feet wide, making a cut 24 inches long at each stroke of the ram. Various forms and sizes of the machine are built as desired, providing for different depths of throat and also for various modes of driving. In the tool illustrated an electric motor is mounted upon a suitable bracket and drives the shear by direct gearing. The shear may be built for driving by belt or by direct engine connection.

States have already given their approval and to which the State of Illinois and the sanitary district of Chicago are committed as a matter of policy and by great financial expenditures already made.

At the annual convention of the Upper Mississippi River Improvement Association, held at Davenport, Iowa, October 22, a memorial was drafted to Congress asking for an appropriation of \$15,000,000 for the permanent improvement of the Upper Mississippi River. The object of the memorial is the establishment and maintenance of a 6-foot channel at low water in the Mississippi from St. Anthony Falls to the mouth of the Ohio River, and the development of the river in such a way as to contribute cheaper transportation to the seaboard for the cities and towns in the tributary territory.

An investigation into the question of the velocity of the wind in various sections of the United States has developed the fact that to Mount Washington probably belongs the distinction of having the highest records. The maximum recorded was 186 miles per hour (over 3 miles per minute), but several cases were found where the figure reached 180 miles per hour. Except for one case in the month of April, these were all in the winter months of December and January.

The Oesterlein New Universal Dividing Head.

The Oesterlein Machine Company, Cincinnati, Ohio, have brought out a new universal dividing head for standard and differential indexing, designed to space for all whole numbers from 1 to 380, inclusive, with the spindle in any position from horizontal to vertical. Referring to the illustrations, and more particularly to Fig. 1, A is the index plate, mounted loosely upon the shaft B, which latter carries upon its inner end a worm meshing with the spindle in the ratio of 40 to 1. It therefore requires 40 turns of the shaft B to give one complete rotation of the spindle. If now by any means the index plate A is rotated with the spindle and in the same direction as the shaft B, for each 40 rotations of the latter the crank F by which it is turned will have made 39 complete rotations relative to the index plate A, thus giving the spacing 39. On the other hand, if by suitable mechanism the index plate A be turned in a direction opposite to that of the crank F, the plate A and the shaft B will be relatively rotated 41 turns, thus giving the spacing 41. The rule, therefore, for which the mechanism of the dividing head must be suited is: If the index plate rotates in the same direction as the crank, subtract the number of turns of

vided for this purpose. For standard indexing requiring delicate adjustment of the spindle the index plate may be rotated for accurate setting by means of the thumb screw L back of the index plate, as best shown in Fig. 2. When the head is used for standard dividing the bracket may readily be removed by taking out one screw.

The swivel head is fitted into the frame with taper shank, and is set in any desired position by the graduated flange M, and held by means of the clamping plate C, Fig. 1. The guide or clamp N, Fig. 2, also serves to add rigidity to the swivel head.

The head swings 11 inches in diameter. The front end of the spindle is threaded, as shown in Fig. 2, and has a standard taper hole. The spindle may be locked for any setting without being thrown out of alignment. The tail stock is arranged for vertical adjustment through a range of 2 inches. Patents covering various novel features of the head have been applied for.

Underground Freight Transportation in Chicago.

The Illinois Tunnel Company were incorporated at Springfield, October 29, with a capital stock of \$30,000,000. This company will take over the Illinois Telephone

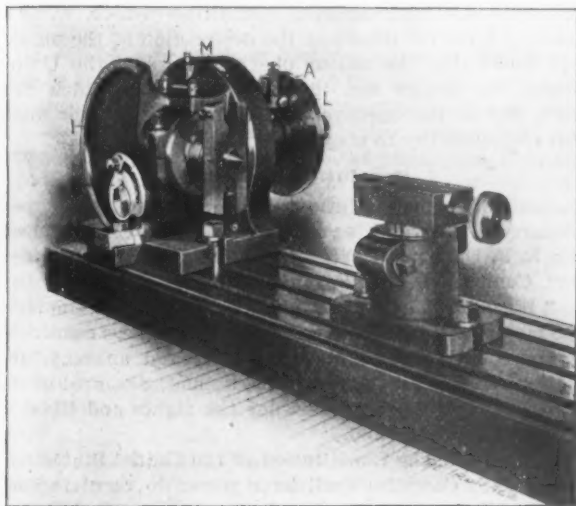


Fig. 1.—Oesterlein Universal Dividing Head.

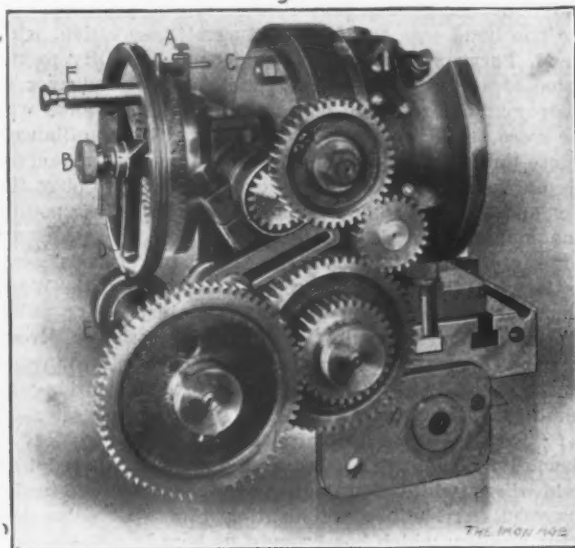


Fig. 2.—Rear View of Dividing Head Mechanism.

THE OESTERLEIN NEW UNIVERSAL DIVIDING HEAD.

the plate for one turn of the spindle from the number of turns of the crank for one turn of the spindle; the remainder will be the spacing number. If the plate rotates in the direction opposite to that of the crank, the spacing number will be the sum of the turns of the plate for one turn of the spindle and the turns of the crank for one rotation of the spindle.

For giving the various ratios of relative rotation between the plate A and the shaft B for the different classes of work to which the dividing head is adapted the train of gearing plainly shown in Fig. 1 is arranged. In this view the head is set for 107 divisions. Secured to the crank shaft B is the worm D, engaging a small worm wheel mounted upon a spindle running within the bracket E, which is screwed to the frame. The index plate A is connected by proper gearing with the screw table for spiral cutting, and with the worm wheel spindle for differential spacing. The various combinations of change gearing are made to give the average spacings required.

The index plate is graduated upon its face, so that the sector may be set to the desired distance or angle by degrees of arc rather than by counting of holes. A table for use in this connection is furnished with the machine. For quick spacing a dividing plate, I, Fig. 2, with 24 divisions, is fitted to the front of the spindle and an index pin operated by a crank, J, is provided, the whole being inclosed and protected from dirt. When this device is used the worm is disengaged from the spindle by means of an eccentric bushing, K, whose re-engagement may be afterward effected without adjustment, as a stop is pro-

vided for this purpose. For standard indexing requiring delicate adjustment of the spindle the index plate may be rotated for accurate setting by means of the thumb screw L back of the index plate, as best shown in Fig. 2. When the head is used for standard dividing the bracket may readily be removed by taking out one screw.

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& Telegraph Company, who have already built about 20 miles of conduit, the trunk lines of which are 6 x 7 feet in dimensions, under the streets of Chicago. The charter of the new company gives them the right to furnish, transmit, convey and deliver signals, sounds, intelligence, packages, mail matter and general merchandise, power, heat and light by steam, water, air, electricity and otherwise, and to acquire, construct, dispose of, hold, maintain, operate and lease to or rent from others all tunnels, instruments and appliances and other property, real or personal, in carrying out such objects. The incorporators are Charles C. Wheeler, Henry A. Wilkening and Thomas A. Moran, Jr.

The new company purpose the construction of tunnels and underground conduits throughout the city, and their charter requires them to build at least 50 miles of tunnel in ten years in addition to those already built. The new company will retire the bonds of the old company, and issue additional bonds up to their capitalization. The present tunnels under the downtown streets are being equipped with 80-pound rails, and heavy electric motor cars for hauling freight. A pneumatic tube system is also being installed, and an automatic telephone system has already been placed throughout the downtown district. It is estimated that \$50,000,000 are expended annually for the transportation of merchandise to and from the various warehouses and railroad stations, and it is the purpose of the Illinois Tunnel Company to divert most of this traffic to their underground transportation system. Railroad yards and depots have already

been connected with the downtown tunnels, and the new extensions will involve the construction of trunk lines from the downtown district to distributing stations at remoter points. The company expect to have their transportation system in the existing tunnels in operation July 1. The proposition is meeting with popular favor, not only because it saves the excessive cost now incident to transfer of freight and parcels from point to point, but also because it will relieve the surface of the streets of a large percentage of the teaming and drayage which now clog the downtown streets.

The Citizens' Industrial Association of America.

At a convention of about 300 delegates, representing large employers of labor, citizens' alliances, employers' associations and other interests opposed to the abuse of the power of labor unions, the Citizens' Industrial Association of America was formed in Chicago October 29 and 30. The meeting was the result of a call issued by the Manufacturers' Association, whose convention had been held in Chicago some two weeks previous.

At the opening meeting it became evident that two widely differing ideas were represented on the floor. On the one hand was the Manufacturers' Association, with D. M. Parry at its head, vowing open hostility to the union idea, and pledged to exert its utmost endeavor to destroy unions root and branch. On the other hand was the more pacific element, representing citizens' alliances, whose purpose is not to destroy the unions but to compel the unions as well as the employers of labor to obey the law and to resort to no unfair means to gain their points. The Manufacturers' Association had for its spokesmen large interests mainly from the East; the citizens' associations had their strongest representation from the West. Thus, for the time, East was pitted against West; union annihilation pitted against conservative methods. Every move on the part of one interest was stubbornly contested by the other. At one point, when a total disruption was imminent, said Percival De Witt Oviatt of Rochester, N. Y.: "Here we are, a body of men with the same object in view, divided into two sides, each white hot; now let us weld these white hot bodies together into one solid, powerful, irresistible organization that will solve the great problem which has brought us here."

Little by little concessions were made until a constitution was adopted which reflects the aim and spirit of the Citizens' Alliance. This, a decided victory for the citizens' alliances and the West, was met by a concession which led to the election of D. M. Parry of Indianapolis, Ind., president of the Parry Mfg. Company, and president of the National Manufacturers' Association, as the president of the Citizens' Industrial Association of America without a dissenting vote and amid hearty cheers.

Other Officers Chosen.

The election of officers was unanimous throughout, the following, besides President Parry, being chosen:

First vice-president, J. C. Craig of the Colorado State and Denver Citizens' Alliance.

Second vice-president, E. M. McCleary, Detroit, president National Electric Manufacturers' Association.

Third vice-president, J. T. Hoile, secretary of the New York Manufacturers' Association.

Treasurer, A. C. Rosepcranz, president of the Evansville, Ind., Citizens' Alliance.

These four with President Parry will act as members of the Executive Committee, and the president will appoint ten more members of this committee, which will be the governing body of the organization. President Parry announced that he would name the committee within a few days.

The secretary will be chosen by this board, and A. C. Marshall of Dayton, Ohio, is looked upon as the probable nominee, though Fred W. Job of Chicago is also said to be a candidate.

President Parry's Statement.

President Parry expressed his satisfaction over the harmonious outcome of the convention. He made the following statement:

"The Citizens' Industrial Association of America is

an attempt to crystallize into concrete expression the feeling of employers and business men as to the excesses of unionism. It must not be understood that this movement is for the purpose of oppressing the working people of the country. The federation established in Chicago to-day is purely defensive. I feel that all the employers of America have in this association a proper vehicle of organization which can defend them against the oppression of lawless trade unionism and stem the tide of socialistic and anarchistic dictation that has been sweeping over the country."

The meeting was one of utmost interest, sometimes dramatic and always intense. The men on the floor were fighters, who bore the scars of battle with union labor. There was no time wasted in small talk; no reminiscences or unimportant recountals of the battles which they had gone through. Every minute was put to advantage. At the close of the convention, when the formerly inharmonious elements had been perfectly unified, Easterners arose and acknowledged that they had learned much from their Western brethren as to the possibility of pacific but none the less positive settlement of labor differences. In short, the citizens' alliance idea prevailed, and the new association is pledged to work along the lines of education and legislation to accomplish its purpose. The new association is in the nature of a law and order league—a national vigilance committee—which, while it does not have for its object the destruction of the unions, will insist that the unions obey the laws of the United States, the States and the communities in which they work just as the employers are compelled by their financial responsibility to obey the law.

Resolutions Adopted.

The following resolutions were adopted. They were prepared by a committee consisting of J. C. Craig of Denver, E. F. Du Brul of Cincinnati, A. H. Bullard of Bridgeport, Conn., and A. B. Farquhar of York, Pa.:

"Whereas, The strained relations between employer and employee are rapidly reducing the business conditions of the country into a state of chaos and anarchy, and the forces of socialism which are assuming control of the situation regard neither law nor the rights and liberties of the individual; and,

"Whereas, The Constitution of the United States provides that 'Congress shall have power to regulate commerce with foreign nations and among the several States,' and further provides that 'no person shall be deprived of life, liberty or property without due process of law, nor shall private property be taken without just compensation;' therefore, be it

"Resolved, That this convention demand that the officials, whether civic, State or national, enforce the law of the land and see to it that every man, woman and child seeking to earn an honest livelihood shall be protected therein by the whole force of the State or of the nation, if it be necessary.

"Resolved, therefore, That in carrying on a firm and uncompromising contest with the abuses as now constituted and conducted, at the same time acknowledging the free right of workmen to combine, and admitting that their combination, when rightly constituted and conducted, may prove highly useful, we earnestly desire to act, and believe we are acting, in the true interests of the workmen themselves; for our welfare is inseparable from theirs and theirs from ours; we are essentially interdependent, each is indispensably necessary to the other; and those who stir up strife between us are enemies of mankind.

"Resolved, That the Citizens' Industrial Association of America is in earnest sympathy with every movement in the interest of labor. Believing that there can be no national prosperity where the working masses are ground down in hopeless poverty and ignorance, we hold as the happiest of all the results of the great industrial revolution achieved in the last half century the greatly advanced and improved condition of the workingman of the present day."

Objects Stated.

These resolutions were supplemented by a statement of the objects of the association, as follows:

"1. To assist by all lawful and practical means the properly constituted authorities of the State and Nation in maintaining and defending the supremacy of the law and rights of the citizens.

"2. To assist all the people of America in resisting encroachments upon their constitutional rights.

"3. To promote and encourage harmonious relations between employers and employees upon a basis of equal justice to both.

"4. To assist local, State and National associations of manufacturers and employers in their efforts to establish and maintain industrial peace, and to create and direct a public sentiment in opposition to all forms of violence, coercion and intimidation.

"5. To foster and encourage by legitimate means the individual enterprise and freedom of industry under which the people of the United States have made this the most successful and powerful nation of the world.

"6. To establish a bureau of organization for the formation of associations favorable to the objects of the organization and federating them into this association.

"7. To establish a bureau of education for the publication and distribution of literature tending to foster the objects of this association.

"8. To create and maintain a fund for such purposes, in harmony with and promotive of the objects of this association, as shall approve themselves to the Executive Committee thereof."

It will be seen by these declarations of principles and purpose that the central object of the Citizens' Industrial Association of America is the enforcement of present laws and the enactment of new laws where present laws are inadequate to cope with the abuse of power now indulged in by an unscrupulous minority in the ranks of organized labor. It is not an arraying of class against class, of employer against employee, but rather a concerted movement to guarantee to both employer and employed protection of individual liberty within the law.

The next convention will be held at Indianapolis next February, at which time the Executive Committee of fifteen, above referred to, will submit and draft a permanent constitution to take the place of the temporary constitution which was adopted at the Chicago convention.

It is hoped by the leaders of the new association that the position of this new power in the industrial field will be so clearly defined and the ideas of its membership so definitely crystallized that the Indianapolis convention may be able to adopt permanently a constitution and code of principles which will dominate the future acts of the Citizens' Industrial Association and make it the central power to which will be referred all labor differences that cannot be adjusted locally.

In order to raise sufficient funds for the prosecution of its work the association will levy the following schedule of dues:

Section 1. All members of this association shall pay an initiation fee as follows:	
National trade organizations.....	\$100
State organizations.....	100
Local general organizations.....	50
Local trade organizations.....	25

All members shall pay dues at the rate of 50 cents per annum per employing member, but in no case shall the amount be less than \$10 nor greater than \$200 per annum.

Preliminary Meeting.

At the preliminary meeting held Thursday morning J. W. Van Cleave of St. Louis was made temporary chairman and A. C. Marshall of Dayton, Ohio, temporary secretary. The chairman appointed the following Committee on Credentials: A. C. Marshall of Dayton, Ohio; H. E. Hornbrook of Kansas City, F. W. Job of Chicago, D. J. Burke of Indianapolis and W. F. Saunders of Helena, Mont.

During the convention frequent reference was made to the Alabama law, and an effort will be made by leaders in the Citizens' Industrial Association to secure the enactment of the same or similar laws in other States of the Union.

Some of the Leaders.

Among the men who took leading parts in the discussion, and who are likely to continue to be powers—offi-

cially or otherwise—in the affairs of the association are: C. N. Chadwick, E. T. Hoile and Marshall Cushing of the New York Manufacturers' Association, and leaders of the radical movement; Frederick W. Job, secretary of the Chicago Employers' Association; E. F. Du Brul, Cincinnati, commissioner of the National Metal Trades Association; J. W. Van Cleave of St. Louis; W. K. Funk, vice-president of the Employers' Association of Dayton, Ohio; Isaac W. Litchfield of the Peoria (Ill.) Citizens' Alliance; A. C. Marshall of Dayton, Ohio, a Nestor in the movement; N. F. Thompson, secretary of the Citizens' Alliance of Birmingham, Ala., who led the fight that resulted in the enactment of the now famous Alabama law; ex-Senator W. F. Samuels of Helena, Mont., who as head of the Citizens' Alliance of Helena destroyed the reign of terror in Montana; Rev. J. C. Boedtker of the Citizens' Alliance of Shelbyville, Ind., whose speech before the convention at the psychological moment turned the tide against the spirit of arraying class against class; T. W. Goodwin of Sedalia, Mo., who claims to be the founder of the Citizens' Alliance; Charles F. Waltz and Charles F. Barley of Marion, Ind.; J. C. Craig of the Colorado State and Denver Citizens' Alliance; Philip R. Toll of Kansas City; A. C. Rosencranz of Evansville, Ind.; W. T. Falconer, W. E. Griggs and S. B. Broadhead, Jamestown, N. Y.; George P. Bent, Chicago; A. B. Farquhar, York, Pa.; Edward H. Davis, Indianapolis, Ind.; Burr Custer, Marion, Ind.; W. W. Pickard, Marion, Ind.; John Kirby, Jr., Dayton, Ohio; C. N. Fay, Chicago; F. W. Hodges, Detroit, Mich.; E. G. Hornbrook, Kansas City, Mo.; W. D. Hodson, Marion, Ind.

As an indication of the educational influence of the convention upon its own delegates, Mr. Parry, the president, who had been previously looked upon as an uncompromising foe of organized labor, declared himself to be now in hearty accord with the Citizens' Alliance idea, and pledged himself to further the plan by every means in his power.

The National Manufacturers' Association will be continued side by side with the Citizens' Industrial Association for a time, and whichever organization proves the more successful will in time absorb the other.

One of the first moves of the association will be the collection of a large campaign fund, to be used for educational and organization purposes, and for the maintenance of representation at the State and National capitals and other political and industrial centers.

As the convention adjourned the delegates sang "America," accompanied by the magnificent pipe organ back of the stage, at the suggestion of President Parry, who declared.

"This is a patriotic movement, embracing the principle of obedience to law and Government, and there can be no more appropriate benediction to this convention than the national anthem."

The Harvester Organization.

The International Harvester Company, comprising the Deering, McCormick, Plano, Champion and Milwaukee companies, have, after a year's labor, perfected the consolidation and centralization of these interests. The executive offices of this company are concentrated at 7 Monroe street, Chicago, instead of being divided among the various plants as heretofore. A further saving will be effected by dispensing with several thousand general agents and canvassers, who formerly carried on extensive competition for the farmers' trade. Manufacturing costs will be reduced by giving to each plant the kind of work that it is best fitted to do, because of its geographical location or for other reasons. In the sales department one general agent will handle all the five lines of machines in his territory, and canvassers will be furnished to local agents as before, though in a greatly reduced number, because the element of competition is practically eliminated. The various departments of the executive end of the business are centralized as above indicated, the following being the leading executive officials:

President, Cyrus H. McCormick.

Vice-presidents, James Deering, Harold F. McCormick, Wm. H. Jones and John J. Glessner.

Secretary and treasurer, Richard F. Howe.
Chairman of Board of Directors, Charles Deering.
Chairman of Finance Committee, George W. Perkins
of J. P. Morgan & Co.

The different departments, with their managers, are as follows:

Sales Department: A. E. Mayer, general manager; R. C. Haskins, manager domestic sales; C. H. Haney, manager foreign sales.

Manufacturing Department: E. A. S. Clarke, general manager; B. A. Kennedy, manager of plants and equipment; E. F. Jones, manager of raw material plants.

Collection Department: G. F. Steele, general manager.

Purchasing Department: H. F. Perkins, general manager; H. L. Daniels, manager fiber department.

Patent Department: J. F. Steward, general manager.

Traffic Department: W. O. Jones, general manager.

Experimental Department: R. B. Swift, general manager.

Security Department: C. S. Funk, manager.

Forming Tools for Finishing Lathe Work.

At the works of the Bickford Drill & Tool Company, Cincinnati, Ohio, a wide range of lathe work is performed by means of forming tools exclusively. Two sets of tools,

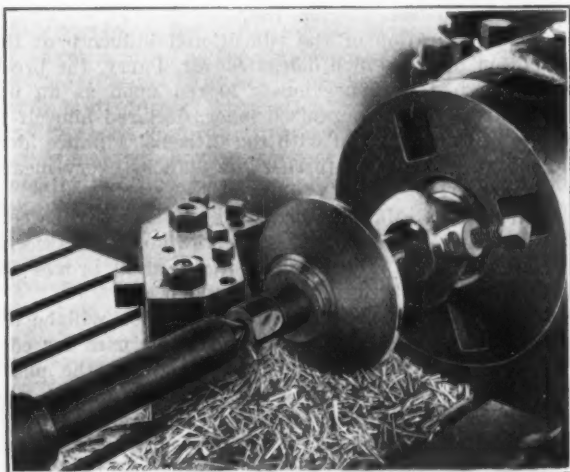


Fig. 1.—Single Forming Tool at Work.

FORMING TOOLS FOR FINISHING LATHE WORK.

however, are employed, with the result that more accurate work is obtained within a shorter space of time than was formerly the case when roughing and finishing was done on one machine.

The rough blanks are first taken to a turret machine, where the scale is removed, leaving the blank within about 1-32 inch of the finished dimensions. This is done by a set of rough forming tools in the ordinary manner.

The semifinished blanks are then taken to a special forming lathe, where they are reduced to finished size by the use of more elaborate tools, which finish several surfaces simultaneously. Fig. 1 shows such a tool in actual operation. Some work is finished by the use of only one tool, as shown in Fig. 1 and at A in Fig. 2. At B in Fig. 2 is shown a bevel gear blank, whose finishing requires the use of two tools, one for the back and one for the face.

The forming lathe on which this work is finished is in design similar to the ordinary engine lathe, but is of slightly heavier construction and has a compound table substituted for the usual slide and rest. The table is provided with T-slots for use in bolting on the tool holders. These tool holders or blocks are provided with tongues underneath to fit the slots of the table, thus allowing the tools to be brought into their proper positions without loss of time.

Scientific and Technical Notes.

As a result of many tests of various systems of railroad car lighting in Germany, the Prussian State Railway Administration has finally settled on a direct system of lighting from a single generator with a steam driven dynamo, located on the locomotive, under the control of the engineer; also auxiliary or regulating storage batteries placed on each car of the train, thus rendering the lighting system on each car practically independent, its lights being assured a constant supply of current from its own accumulators, which accumulators are kept charged by the dynamo on the locomotive. It is stated that this combination meets more perfectly than any of the others the requirements of simple, economical and efficient construction, maintenance and attendance in regular service.

A new idea is to be tried on a 105-mile electric transmission line in Mexico. Steel towers will be placed 440 feet apart, and strand cable will be used to convey current at a pressure of 60,000 volts. It is hoped that by this means many of the disadvantages pertaining to the present systems will be avoided.

The British Westinghouse Company are supplying to the city of London Electric Lighting Company a direct current generator of 1800 kw. capacity at a pressure of 450 to 500 volts, which is equipped with a commutator of unusual size. The external diameter of the commutator is 10 feet, and the circumference contains 900 segments

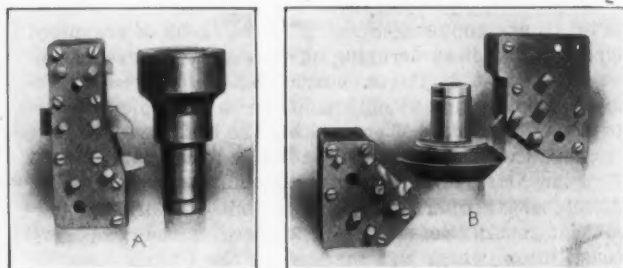


Fig. 2.—Single and Double Forming Tools.

of hard drawn copper. The new generator will be run in connection with units of similar size already installed in the Bankside Station.

Professor McKendrick has been carrying out a series of experiments with a highly sensitive galvanometer, to demonstrate the electrical phenomena of muscles, nerves and heart in certain fishes, which, on account of these peculiarities, are called electric fishes. They have the power of giving an electrical shock to anyone touching them, as if from a magneto machine. There are in all about 50 known species of fishes which have this peculiar power, but only some half dozen have ever been studied in detail. According to the experimenter there are few departments of physiological science in which can be found a more striking example of organic adaptiveness than in the construction of the electric fishes. They have specialized organs for the production of electricity on a basis of economy far surpassing anything yet devised by man for this purpose.

Spier Falls, on the Hudson River, 60 miles from the source and 40 miles above Albany, N. Y., is to yield 32,000 horse-power for electrical transmission to Albany, Troy, Schenectady and many smaller places. In length of transmission this line is not surpassed east of the Rocky Mountains; while the total power developed is greater than that developed elsewhere by water, with the exception of the plants at Niagara and Sault Ste. Marie. Ten pairs of turbines are used, with a head of 80 feet. Eight of these pairs are each rated at 5000 horse-power and drive each a 2500 kw. generator. The other two units are rated at 3400 horse-power each, and drive 2000 kw. generators. All of the generators are of the three-phase revolving field type, and operate on 40 cycles per second.

The Montreal Street Railway Company are now purchasing 5000 horse-power from a water plant 16 miles up the river. Power is supplied at 66 cycles, quarter phase, and is converted into direct current. The first installation consisted of a 500 kw. synchronous motor and generator, but six induction motor-generators were afterward ordered. The induction motors are considered preferable to the synchronous motors, as less care, attention and skill are required in operation, and there is less disturbance to the system of the power company. The induction motors are among the largest that have ever been built, and the installation is the largest composed entirely of this type of unit.

In an address before the Engineers' Society of Western Pennsylvania, Charles F. Scott referred to the time 50 years ago when, against the protests of hack drivers and sympathetic citizens, the first railroad bridge was built across the Allegheny, bringing together the track from Ohio and the track from Philadelphia—bringing them together but not joining them, for the State Legislature had ordained that the gauges of the tracks should be different, in order to prevent domestic cars from wandering too far from home.

The *Power and Lighting Economist* gives tables showing the various losses sustained in converting coal into power and light. Starting with coal of a heat value of 13,500 British thermal units, the losses are traced through the boiler and engine, in which 12,227 units, or 90.57 per cent., disappear. The generator and engine friction account for 124 more, leaving 1149 units delivered to the switchboard. A further loss of 115 units in the line and 52 in the transformer now takes place. When the current is used for motors in factories, 98 additional units are lost in the motor, leaving 884 delivered to the line shaft. This makes an ultimate efficiency of 6.54 per cent. When used for trolley cars a further loss of 266 units is sustained in the rotary, trolley and feeder lines, and in the car motors. This leaves 716 to be applied to useful work, a total of 5.30 per cent. When used for lighting no loss is sustained beyond that in the transformer, hence 982 British thermal units are delivered to the work in hand. This represents an efficiency of 7.27 per cent.

Professor Slaby has demonstrated after exhaustive experiments that the surface of the earth plays an important part as a conductor of Hertzian waves, in which many have heretofore regarded the air as the only conductor. He constructed an artificial earth, which was rendered insensitive to external influences by the use of a covering of zinc for the floor of his laboratory. He then set about his experiments with waves on the floor, and continued in the work until his theory was proved completely.

The Westinghouse Electric & Mfg. Company report that in one instance, where 30 steam engines of an aggregate of 1375 horse-power were supplanted by 57 motors of a total of 1065 horse-power, for machine shop driving, the average daily saving in steam was 41.6 per cent. and of combustibles 32.2 per cent. (coal saved 20,000 pounds daily). In other cases electric driving has reduced by 50 per cent. the cost for engineer, coal and water; the fuel account, 20 per cent.; the cost of power, 44 per cent. The gross saving was 30 per cent. with direct connected motors, and 22 per cent. with belted or geared motors.

Germany has, during the past few years, gone quite extensively into the submarine cable business. Nearly 7500 miles of cable have been laid by German firms during seven years, at an average cost of about \$1000 per mile. It is said that the growth of German interests, both military and commercial, will in the future require the building of more cables by Germany, quite independent of foreign nations. Germany now has a cable factory and two cable steamers.

The city of Vienna owns two electric plants, situated side by side, the one used to supply current for traction and the other for lighting purposes. They can be connected, if necessary, and furnish three-phase current at

5500 volts. For the inner sections of the city and for traction purposes, the current is transformed by motor-dynamos. In the traction central station steam is furnished by a battery of 20 Babcock & Wilcox boilers, at a pressure of 210 pounds per square inch. The engines are quadruple expansion, furnishing normally 3000 horse-power and a maximum of 3720, at 90 revolutions per minute. The outside diameter of the stationary armature is 30 feet; the revolving field is nearly 25 feet in diameter, and carries 64 poles, giving a frequency of about 96 alternations per second. Motor-dynamos are used as exciters, each one serving two of the main generators.

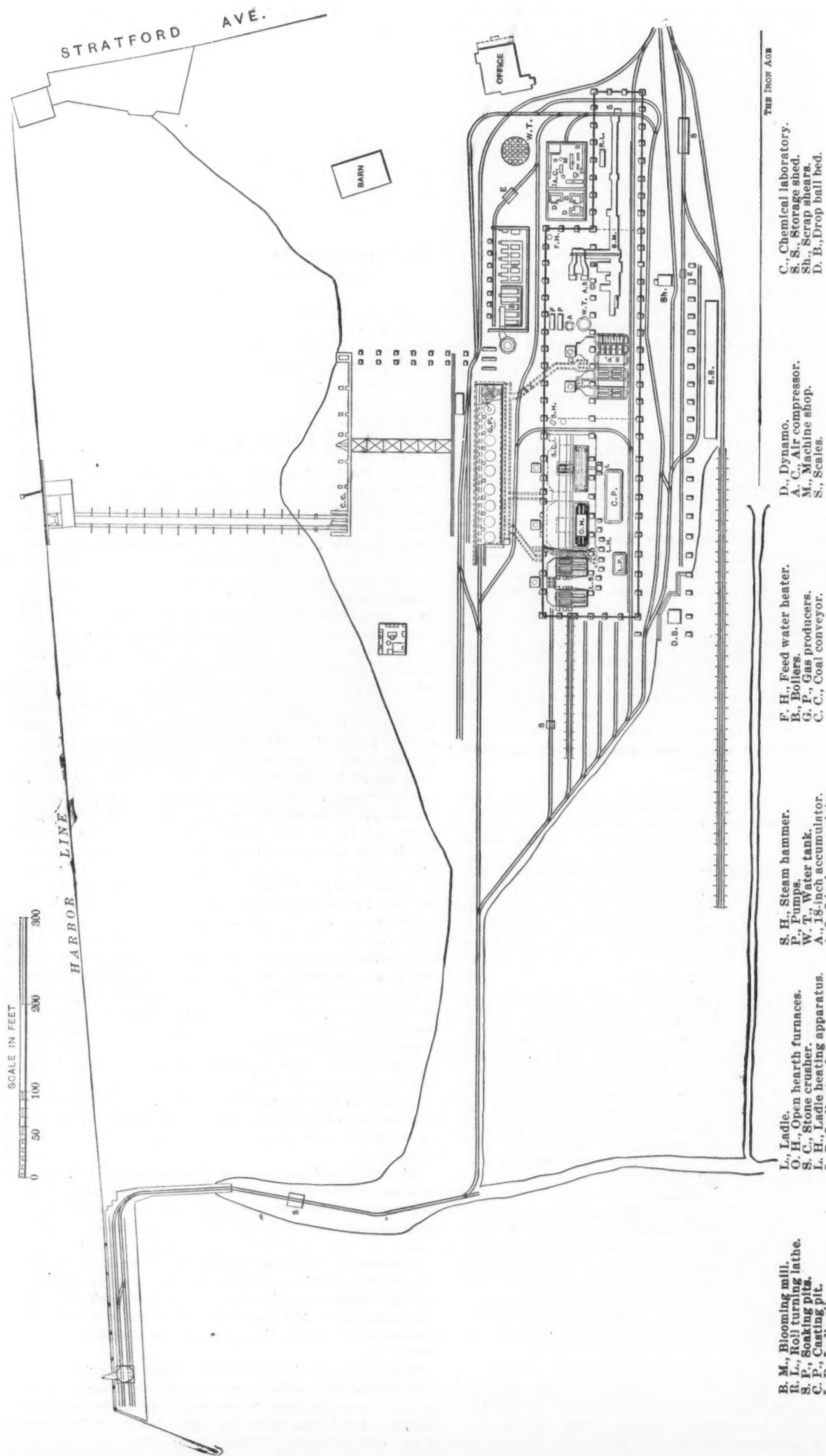
The American Tube & Stamping Company's Steel Plant at Bridgeport, Conn.

On July 18, 1903, the new steel works of the American Tube & Stamping Company were put in operation, and have been running steadily ever since. The start in the melting furnaces was made without the slightest mishap whatever, and the furnaces have been running in the same manner right along. The blooming mill, after two or three days' testing, has been running with a steadily increasing output without interruption also.

On pages 26, 27 and 28 we give a plan and elevations through the melting house and through soaking pit and boiler house, and of the coal handling machinery. The plant consists of a main building containing three 35-ton basic open hearth furnaces, two four-hole soaking pits with room for a third one, a 34-inch blooming mill, engine and shear, pumps and accumulators, a machine shop and dynamo room, a boiler house and a gas house, besides office buildings and laboratory. Its location is an ideal one as to traffic communications. A standard gauge electric railroad 5000 feet long connects the works directly with the New York, New Haven & Hartford Railroad Company's freight yard, and on the southern part of the property the company have a dock 300 feet long and 36 feet wide, directly on the 18 feet deep channel of Bridgeport harbor. Vessels can land at this dock without the use of tugs and without passing any bridges, and the dock is supplied with a revolving turret gantry crane of 30 feet reach and 10 tons capacity. The dock can be extended along the harbor line some 1000 feet, if necessary. This dock is used for unloading pig iron and scrap and for loading billets. Along this same harbor line further north is the coal dock, built exclusively for discharging coal, with an unloading capacity of about 80 to 100 tons of coal per hour. The coal is taken from the vessel by an automatic clam shell bucket, thrown in a hopper and run through the double scale on a Robins Conveying Belt Company's endless rubber belt. This belt discharges on the other end on a conveyor belt running at a right angle. Belt No. 2 discharges onto a flying bridge containing another belt, the tripper of which puts the coal into storage. On the same bridge is a clam shell bucket which picks up the coal out of storage and puts it back on the second conveyor, which again discharges through another pair of scales, weighing the coal for daily use, on the fourth belt running at right angles on an incline to the distributing station, from which belts take the coal either to and through the gas house, dumping it on the floor, or to the coal hoppers of the boiler house.

The main building consists of three parts: The melting house proper is 228 feet long and 110 feet wide, symmetrically built with cranes of 52 feet span over the furnaces as well as over the pit side. The furnace hearth is 12 x 24 feet. The furnaces are supplied with rather large regenerators, under the charging floor, back of the furnace, and spacious slag pockets, 30-inch gas and 33-inch air Forter reversing valves, and independent brick lined iron stacks, 114 feet high by 4 feet 8 inches inside diameter. A Wellman charging machine charges the furnaces.

The charge consists of 72,500 pounds, 50 per cent. of which is pig iron and 35 per cent. very light scrap, such as skeleton strips from the stamping works, scrap from hoop and band iron mills, rod and wire mills, &c., and 15 per cent. of heavy railroad scrap, such as old rails,



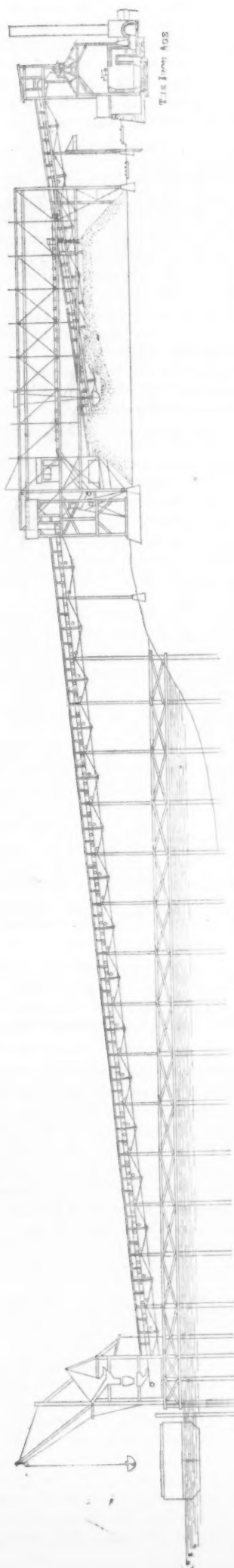


Fig. 2.—Section through Robins Coal Handling Plant.

THE OPEN HEARTH STEEL PLANT OF THE AMERICAN TUBE & STAMPING COMPANY, BRIDGEPORT, CONN.

drawheads, &c., the necessary amount of ferromanganese, &c. The product is chiefly extra soft steel for cold rolling and stamping, averaging 0.08 to 0.10 per cent. carbon, 0.35 per cent. manganese, 0.015 per cent. phosphorus, and 0.025 to 0.035 per cent. sulphur. Special heats are made as low as 0.06 carbon and up to 1.15 per cent. carbon, manganese from 0.12 to 1.20 per cent., &c., as the customers require. The furnaces make 17 to 18 heats per week regularly.

The best record of the furnaces has so far been made by No. 2 furnace during the week of October 11 to 17. The furnace started to charge October 11 at 3.10 p.m., and tapped the twenty-first heat October 17 at 5.35 p.m. The average time from starting to charge to tapping was 6 hours and 33 minutes, and from tapping to charging 27 minutes. The quickest time from starting to charge to tap was 5 hours and 55 minutes. The shortest time consumed in making bottom ten minutes. The total weight of ingots for the week was 1,439,740 pounds, equal to 642 tons. About 1300 pounds of ore (60 per cent. Fe.) was used per heat. Thus the yield was:

	Ingots. Per cent.	Scrap. Per cent.	Loss. Per cent.
Counting the ore as 60 per cent. Fe.....	93.40	2.17	4.43
Not counting the ore.....	94.45	2.19	3.36

Remarkable was also the very small quantity of refractories used for repairing the bottom: It amounted to 30 pounds of raw dolomite and 14 pounds of burnt magnesite per ton of finished ingots. The coal consumption is also very low, not exceeding 580 pounds per gross ton of ingots. It must be remembered that all the above results were obtained from bottom cast 14 x 18 inch ingots, weighing as an average about 2900 to 3000 pounds. They were cast in two groups of 11 to 12 ingots each. The steel is cast from the bottom in order to avoid all surface defects and to insure a perfectly uniform mixture of the steel, as the hot and cold rolling departments of the American Tube & Stamping Company are very particular in regard to any surface defects of the billets or deficiencies caused by segregation, and can only use the very best material for their customers as well as for their own stamping works. Some remarkable results have been obtained with the product of the new furnaces in stamping, as certain operations in deep stamping can be carried through without any annealing with their own material, which formerly required at least three annealings during the stamping process when using the best possible obtainable material from other makers.

The pit side is served by a 50-ton main hoist and 10-ton auxiliary hoist Shaw wire rope crane and a 10-ton ordinary crane. Two hundred and eight feet of the melting house is occupied by the furnaces, and the other 20-foot bay contains on the charging side a steam hammer, the platform extending only to 208 feet, thus giving the crane over the furnaces a 20-foot bay for lifting and lowering buggies and skips. The charging floor has removable hatches over all the valves and also one on the end for raising charging material, in case the locomotive should not be able to push the buggies up the incline track to the south end of the platform.

The soaking pit and mill building is 220 feet long and 110 feet wide, but is only of the same height as the melting house on the side of the mill and the soaking pits themselves. The pair of 46 x 60 inch reversing Tod engines, the two 30 and 18 x 8 x 24 inch compound Epping Carpenter hydraulic pumps, and the 18-inch accumulator are in the leanto of this building. The soaking pits have each four holes, 4 feet 6 inches by 9 feet 6 inches in size, two and two of which are regulated by Forter gas valves and butterfly air valves. The holes are unusually long and, therefore, the covers are made in two pieces. A long hole gives the flame a better chance of development and offers more space for ingots; in fact, these pits will take as many as ten 14 x 18 ingots in a hole. The 34-inch blooming mill is of the usual type, furnished by the United Engineering Foundry Company, Pittsburgh, Pa. No extraordinary records have been made on the same, as considerable cold steel had to be charged because the blooming mill was not started at the same time as the open hearth furnaces, and as the product was chiefly 3 x 4 billets, 50 pounds and less.

The shear table is somewhat out of the usual, as it is constructed on an incline of $\frac{1}{2}$ inch to the foot. The table being 102 feet long brings the shear at quite an elevation, which avoids the construction of a conveyor for the removal of billets from the shear. As will be

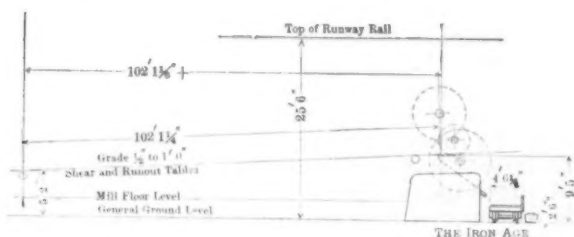


Fig. 5.—Arrangement of Inclined Shear Table.

observed from Fig. 5, the billets drop from the shear blade over an incline casting directly in the skips on buggies, the buggies coming on a very slightly inclined track to the shear by gravity, and from there over scales into the yard. The shear building is a continuation of the

9 feet 6 inches inside diameter. The labor in the boiler house is cut down to a minimum, as one foreman, one water tender and one ashman form the whole crew for a 2200 horse-power boiler plant per turn. The coal comes from the hoppers through chutes directly into the stokers, which automatically bring it to the ash box after all the carbon is consumed. The stokers have an automatic regulation.

The machine shop and engine building contains the most necessary tools for repairs in the machine shop, two air compressors and three 160-kw. Ridgway-Thompson-Ryan dynamos, direct connected to McEwen engines. Two of these generators give a 230-volt direct current for the cranes, charging machine, shear tables, roll lathe, yard shear, coal conveyors and lights. The third one furnishes the current for the electric freight railroad and standard gauge railroad service around the works. The fact that a right and left generator and engine of different potential were set opposite each other in the dynamo room was of great aid in the construction of the works. Long before the boilers were ready for making steam the cranes and machine shop, &c., could be used, as the street railway company furnished 550-volt current

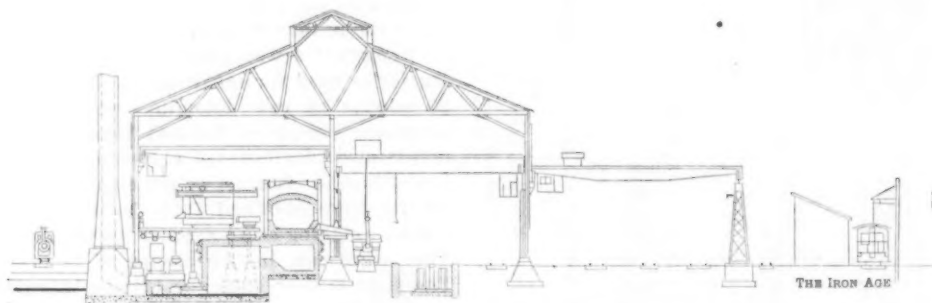


Fig. 3.—Section through Open Hearth Furnace.



Fig. 4.—Section through Boiler House and Mill.

THE OPEN HEARTH STEEL PLANT OF THE AMERICAN TUBE & STAMPING COMPANY, BRIDGEPORT, CONN.

blooming mill and soaking pit building, 160 feet long. Thus the main building has a total length of 608 feet. The crane runway runs all the way along from one end to the other, but it is only constructed to carry the 50-ton crane to the north end of the soaking pit and mill building, the balance being constructed for the 10-ton crane only. The soaking pit crane is equipped with a special pair of grip tongs, which are closed by a rope running slightly ahead of the rope lifting the tongs proper. The whole tongs can be turned around a vertical shaft by the soaking pit crew.

Along the outside of the main building for a distance of 408 feet is another runway for a 10-ton crane of 65 feet span, which is used for dumping the billet skips, stocking ingots, loading and unloading cars, serving an electrically driven alligator shear for cutting scrap rails and the like, and also acting as a skull cracker, or drop on one end.

The gas house contains ten water seal Herrick producers of 12 feet diameter. The boiler house contains ten 78-inch x 18-foot horizontal return flue tubular boilers, equipped with Wilkinson stokers. These stokers are working to great advantage, and as the fuel consists of anthracite slack (Nos. 2 and 3 buckwheat), absolutely no smoke escapes from the brick stack, which is 135 feet high and of

to the plant. The 550-volt generator was changed into a motor, and the piston rod on this engine as well as on the 220-volt engine opposite was taken out, a belt put over the two governor wheels, and a 220-volt dynamo driven by the thus improvised 550-volt motor. The machine shop is driven by a 220-volt 25 horse-power motor, and an air compressor for the door and spout lifting and other similar purposes is run from the machine shop shaft. Thus it was possible to run the steam hammer and a steam rock drill and other machinery intended for steam service by compressed air without the presence of any boiler whatever.

From the plan it can be seen that the plant can be increased to three times the capacity by the addition of melting furnaces, gas producers and boilers.

The company have a large demand for the product of the steel works by their own finishing mill, and also several customers in the New England States and the East who were attracted by the quality of the product. The start of the plant was very successful, and the operation is being conducted on the most economical lines possible, not only by labor saving devices, but also by special attention to fuel economy, high percentage of yield, low percentage of scrap and waste, minimum consumption of refractories, repairs and the like. The plant was de-

signed, built in 13 months, and put into operation by L. Luetscher, superintendent of the works.

The officers of the American Tube & Stamping Company are F. A. Wilmot, president and treasurer; Clarence B. S. Miller and Chas. R. Wilmot, vice-presidents; A. J. Middlebrook, assistant treasurer, and Henry W. Nutt, secretary; Wallace Buell is manager of the steel plant.

New Publications.

Die Industrie-und Gewerbe-Ausstellung. Dusseldorf, 1902. (The Exhibition of Industry and Arts.) Published by August Bagel, Düsseldorf, Germany, 1903.

It is generally acknowledged by those who had the privilege of visiting the Düsseldorf Exhibition in 1902 that it was a worthy rival of many far more ambitious undertakings, having embraced only the industrial districts of Westphalia and the Rhine provinces. It is a proof of the extraordinary vitality of those industries that the plans matured during the days of prosperity were carried out in spite of great depression, which befell Germany in 1900 and 1901.

The portly volume which lies before us contains a full record of the work, with elaborate descriptions of the exhibits and of the proceedings. It is somewhat unusual that funds should be available for such a magnificent piece of work and that the enthusiasm should have outlived the active days of preparation and fulfillment. The finances must have been admirably managed, since the exhibition closed with a total surplus of about 1,400,000 marks.

The fact that the Westphalian and Rhenish districts are the great centers in Germany of iron manufacture naturally made the exhibition particularly interesting to iron makers, and under the leadership of H. Lueg, the president of the exhibition, the manufacturers outdid any previous achievement at any of the great international shows.

The memorial volume before us describes in detail the inception, organization and management. The descriptions of the exhibits have been intrusted to specialists, in most cases the men directly in charge as representatives of the exhibition authorities. Thus the account of the metallurgical exhibits is from the pen of R. M. Daehlen, that of the metal industry by F. W. Luehrmann, and that of machinery by E. Duecker and J. C. Kremer.

The volume, with its fine printing and excellent engravings, is an exceedingly creditable production.

Earth Work and Its Cost. By H. P. Gillette, associate editor *Engineering News*. Engineering News Publishing Company, New York. 244 pages, 5 x 7½ inches. Illustrated. Price, \$2.

It is unfortunately a fact that for a large portion of the vast amount of earth work involved in perhaps the majority of all engineering constructions, the estimating of costs is all too commonly a matter of more or less intelligent and mathematical guesswork. Reasons, if not excuses, for this unsatisfactory state of affairs are to be found in the wide variance of conditions existing in different cases, the costs for no two projects being the same in nature and relative quantities of materials to be handled nor in the methods to be employed in the work. Furthermore, properly analyzed and detailed reports of costs on only comparatively few enterprises are made available for guidance in future work. It is with a view to bringing into practical and useful form the data upon this subject comprised in various articles published from time to time in *Engineering News*, and covering a considerable range and variety of engineering work that the author has prepared the book under consideration. The general subject of earth work, preliminary and constructive, is analyzed for separate treatment of the various details, each of which is taken up separately and discussed at length. The result is a series of chapters in which the data presented by a number of engineers in published reports of costs on various engineering works are compiled for comparison, and are made to serve as bases for the author's specific conclusions and general comments. The costliness of unreasonably exacting

specifications, especially when not based upon intelligent and reliable data as to the nature of the subsurface materials to be encountered, is noted, the author laying stress in this connection upon the value of test pits even at considerable excess of cost over the more common practices. Measurements of earth work, costs of various means and methods of excavating, conveying and trimming are severally considered, and rational processes of analysis and estimating are outlined for each. Relative values and costs of operation of different types of machinery and appliances are also discussed. Illustrations are given wherever their use may serve useful purposes, and it is safe to say that the book will be found of value as a guide to any one desiring to approach more closely than heretofore to economic and reliable results in estimation of earth work.

Electric Railway Economics. By W. C. Gotshall, president and chief engineer of the projected New York & Portchester Railway Company. McGraw Publishing Company 114 Liberty street, New York. VI + 252 pages, 6 x 9 inches. Illustrated. Price, \$2.

In this book the author presents, with some amplification, the subject matter of a series of lectures delivered by him at Lehigh University during the early months of the present year. The lectures themselves attracted considerable attention, due to the novel and practical manner in which they treated the various phases of electric railway economics, both preliminary and operative, and the object of their publication in book form is to render their information available to the large number of engineers now directly interested in electric traction work. High speed interurban railways alone are considered, the treatment taking up the preliminary investigations of probable earnings and expenses and continuing through matters of right of way, construction, schedules, power, equipment and administration. Graphical methods of computation are applied to numerous features of the preliminary and engineering work, including schedules, power plant, rolling stock equipment, &c. A chapter is devoted to a comparison of third-rail and trolley systems of power application, the advantages and limitations of each being stated and discussed.

The chapter upon power plant equipment takes up at considerable length the matters of location and general design of stations, giving data relative to the comparative values of different types of machinery and apparatus under various conditions. Storage batteries and their usefulness in assisting the main station generators over the peak loads, as well as in contributing to the economy of substation operation, are fully covered in a separate chapter. Systems of accounting are treated quite fully and the best methods of recording data relative to expenses of operation and maintenance are outlined. Organization and administration of operating forces form the subjects of one chapter. In an appendix is given a complete set of specifications for a modern high speed interurban electric railway of moderate size, operating upon its own right of way and having its own complete equipment, including power generating station. It is probably true that the book is to an unusual degree up to date, if not in many respects actually in advance of its subject so far as present practice in traction engineering is concerned.

It is stated that within the last three months the number of preferred stockholders has increased from 34,938 to 40,128, and the number of common stockholders from 28,987 to 34,958, making the total number of United States Steel Corporation stockholders at present 75,086.

The Chicago Pneumatic Tool Company are to open sales offices and showrooms in Denver, Col., when they will carry a full line of air compressors and pneumatic tools.

J. M. Martin has resigned his position as district sales agent at the Philadelphia office of the Nernst Lamp Company, and A. E. Baker has been appointed as his successor.

The Iron Age

New York, Thursday, November 5, 1903.

DAVID WILLIAMS COMPANY,	-	-	-	-	-	-	-	-	-	PUBLISHERS.
CHARLES KIRCHHOFF,	-	-	-	-	-	-	-	-	-	EDITOR.
GEO. W. COPE,	-	-	-	-	-	-	-	-	-	ASSOCIATE EDITOR.
RICHARD R. WILLIAMS,	-	-	-	-	-	-	-	-	-	HANDWARE EDITOR.
JOHN S. KING,	-	-	-	-	-	-	-	-	-	BUSINESS MANAGER.

The Developments in the Scrap Trade.

Were it not that the American iron trade is accustomed to sudden and sweeping changes in fundamental conditions, it would be proper to characterize as sudden the change which has occurred in the scrap position since last winter. That the trade at large did not allow in its calculations for a radical readjustment of conditions in scrap is amply evidenced by market occurrences. While it is not abnormal for a scrap dealer to be "short" of scrap, during last winter dealers in the Pittsburgh and more Western districts were chronically in this condition, having made what appeared to them most favorable contracts to supply basic open hearth works with scrap, yet finding the greatest difficulty later in securing the material with which to fill the contracts. In many cases dealers had to buy scrap in limited tonnages at several dollars a ton above the prices in the contracts which this scrap was to fill. All their estimates as to how much scrap would come into their respective markets were proved to have been too high, while the demand from steel works, iron mills and foundries was abnormally large.

The conclusion was then reached both by open hearth steel makers and by scrap dealers that the rapid growth of the basic open hearth steel industry was outrunning the outcome of scrap, pointing to the permanent establishment of a condition where the market value of each grade of scrap would bear a relation to the market price of pig iron determined wholly by the relative cost of manufacturing steel from it. With this understanding, contracts were entered into between steel works and dealers for supplies of scrap for the first half of this year, and even for the entire year, at very high prices.

The outcome has been an extreme disappointment all around. While there has been a great decline in pig iron, the decline in scrap has been much greater, and it has also been very erratic. Consumers could find no gratification in the high priced contracts, and dealers very little, since they had bought largely against the contracts, and were met with requests to delay shipments which they could not ignore.

The conclusion that scrap had been put on a permanent basis of scarcity was reached upon insufficient premises. It was not a sufficient argument to point to the rapid growth of basic open hearth steel production, although this increased from a bare 1,000,000 tons in 1897 to 4,500,000 tons in 1902, five years later. During all the growth up to and including 1901, the percentage of scrap used increased steadily, as shown in a rough way by dividing the production of basic pig iron year by year by the concurrent production of basic ingots. There was a steady drop in the percentage of pig iron from about 53 per cent. in 1897 to 40 per cent. in 1901. The balance was scrap and ore, the ore percentage being negligible in this connection. There was no hint, during these years in which basic steel production rapidly increased, that the outcome of scrap was insufficient for the demand. Only in 1902 was there a change, when the percentage of pig iron to ingot production advanced to 45 per cent. In the light of

recent developments, it is just as reasonable to assume that if the statistics teach any lesson at all, it is that the advance of all pig processes, such as the Talbot and Monell, are responsible for the decreased scrap consumed.

In explanation of the largely increased outcome of scrap, the point to be noted is that Bessemer is distinctly the steel which comes back quickly as scrap, notably in rails, and also in many other lines, where the very fact that the article is likely to be scrapped makes the consumer select the cheaper steel in the first place. If steel comes back as scrap in, say, 15 or 20 years, then it is to be noted that in the decade from 1880 to 1890 the production of Bessemer steel increased three and a half fold, from 1,074,262 to 3,688,871 tons. But theories as to how soon steel comes back as scrap are more interesting than instructive, since there are changes within changes. Changes in the use of the steel are as important as changes in the rate of production. For this reason the outcome of old steel rails has increased much more rapidly than the production. Thus of the heavy production of 2,101,904 tons of Bessemer steel rails in 1887 about three-fourths went into new lines, Poor reporting 12,984 miles of absolutely new railroad built, the greatest annual railroad extension ever seen. At the present time, with a rail production not one-half greater, the proportions are well nigh reversed, close to three-fourths going for replacements, and not much over one-fourth to new roads, so that the outcome of old rails, in proportion to current production, has vastly increased.

It is now clearly discernible that the insufficiency of the scrap supply last winter was due not so much to the heavy demand as to a partial failure in the outcome. The scarcity was concurrent with the greatest freight congestion ever seen, when railroads had neither time nor facilities for gathering up scrap for the market. There is no doubt that the output of scrap during this period suffered much more than the output of pig iron. Failure to recognize this fact at the time has led to most costly blunders, and to an almost complete demoralization of the market, from which recovery will necessarily be slow. Only a comparatively few railroads follow the policy of marketing all their scrap month by month. The majority show a tendency to allow their scrap to accumulate on a falling market. The scrap now being accumulated will act as a brake for a long time to come should prices tend to recover.

National Revenues Heavily Decreased.

The National Government is no longer accumulating a heavy surplus. The Treasury statement issued at the close of business on October 31 placed the total receipts for the first four months of the fiscal year then ended at \$190,397,285 and the expenditures at \$189,811,697, leaving a surplus of only \$585,588. The surplus for the corresponding period of last year was \$13,500,000, not including \$5,000,000 of anticipated interest paid out in that time. The customs receipts fell off this year about \$8,000,000, which accounts for a very large part of the loss in surplus. It is stated that, while the shrinkage in the customs receipts was mainly in the metal and sugar schedules, a great reduction is observed in the importation of articles of luxury. The Treasury surplus for the fiscal year ended June 30 last was \$54,000,000. It is too early to conclude that this surplus will be completely wiped out in the current fiscal year, but it will undoubtedly be so heavily cut down that business interests will have no reason to complain of the Government draining the country's financial resources.

The Plate Industry of Coatesville.

One of the most remarkable facts in the history of the iron trade is the manner in which the plate manufacturers of Coatesville, Pa., have held their prominent position. About the beginning of the nineteenth century, in a small mill at Coatesville, operated by water power from Brandywine Creek, the first boiler plate produced in the United States was made. Uninterruptedly from that time the little town has been the seat of a plate industry. The location was a favorable one in the early days, as it was not far from charcoal furnaces producing the pig iron which, when hammered into blooms, became the raw material for the primitive boiler plate makers; nor was it far from a market for the manufactured product, being only 33 miles from tidewater at Wilmington, Del., and 38 miles from Philadelphia. In time the water power proved inadequate to the growing demands of the business and was displaced by steam. Charcoal blast furnaces also disappeared with the clearing away of forests, and puddled anthracite or coke iron took the place of the hammered charcoal bloom. As the locality was far from coal or iron ore deposits, apparently no special reason existed for the continuance of the plate industry at that point, apart from nearness to Eastern markets, except the one very important fact that a race of expert mill men had been reared who knew the plate trade thoroughly and were too much attached to their native town to go where they might find fuel and raw materials somewhat cheaper.

Thus the Coatesville plate makers not only continued to make plates, but they kept pace with every improvement in rolling mill practice, and, in truth, were often a little in advance. When soft steel began to compete with puddled iron they quickly perceived what the change portended, and bought their raw material from the steel works. Then they put up their own open hearth steel plants, so as to control their steel supply as well as its quality. In late years two strong organizations have occupied this field. Each built a steel plant of good size, and each subsequently doubled it. In the past year both built large additional plate mills, the first being wider than any other mill then in the country, and the later one even wider than that, and now the little town boasts its ownership of the two widest plate mills on this continent. Taking the total plate making capacity of both works, they are capable of producing close to one-third of the plate output of the country.

There promises to be very extensive electric railway activity next season, from which many lines of manufacture will profit. The prevailing tendency to consolidate the smaller street railways into large systems leads to thorough rebuilding and re-equipment. The demand for greater speed means heavier rails, better rolling stock, heavier feed and trolley wires, new power stations or increased engine and generator power for existing power stations; rotary plants where high potential feed currents are employed; development of water privileges, and new car barns, generally of steel construction. The public demand the best of rapid transit, and street railway managers have learned from the experience of their own or other systems that first-rate service earns larger dividends on the larger capital invested than poor service can earn on small capital. Every street railway, with very few exceptions, built prior to five or six years ago has either been re-equipped and rebuilt, or else must be if it is to be maintained at a paying basis. The trunk lines must be given the best of cars and the best of motive power in order to successfully compete with the

steam railroads. The trolley has it pretty much its own way in suburban traffic, but for interurban traffic the steam railroad can only be met with the best that electric railway science can furnish. Plans already matured by street railway companies operating systems or projecting new lines assure a great volume of business for 1904, and before the winter is far advanced the new work decided upon will have vastly increased.

One Hundred* Miles an Hour.

President Pritchett of the Massachusetts Institute of Technology, who witnessed the speed trials on the Marienfelde-Zossen experimental railroad, at which the rate of 125 miles an hour was attained for a good deal less than 125 miles, and for a much shorter period than an hour, was so much impressed with what he saw and was told that he is of the opinion that 100 miles an hour is a practical speed for railway operations. In a sense he is right. No doubt a railroad could be so built and equipped that trains could be run upon it at this average speed with measurable safety and tolerable comfort. Whether it would pay to seek this standard, or anything approaching it, by a single stride, and for no better reason than that the German experiments have demonstrated the undisputed proposition that such speeds are mechanically possible with modern electric motors, is quite another matter. The speed in question is the least part of the problem; much the larger part resides in the limitations which at present hedge round the engineer in providing a permanent way suitable for such speeds and maintaining it summer and winter, in building rolling stock of such perfection that it will be durable under the excessive strains of such exaggerated train acceleration, and in inducing passengers to pay the rates of fare which must be charged to make such a railroad profitable to those who build and operate it.

The practical aspect of the matter is this: Train acceleration is a development. Safety is consistent to-day with average speeds which 25 years ago would have been impossible. In another 10, 20 or 30 years the constant study of transportation problems will have brought about a further advance in this direction, and by that time 60 to 75 miles an hour will not be counted wonderful. It may be that in time we shall approximate or attain the 100-mile standard in train movement, but if we do the conditions of practical railroading will have changed materially meanwhile. It would be a very foolish employment of capital to try now to apply in practical railroading the German results on the Marienfelde-Zossen line, which really established nothing of value. They are interesting, of course, and may have repaid those who made them in honors and advertising, but in practical railroading revolutionary results may safely be regarded with suspicion. Ballast, ties, spikes, fish plates, rails, wheels, axles, switches, cars, signals, a hundred items of railroad construction and equipment, must all be brought up to the standard of the motor mechanism, and until this is done the latter will have more of scientific than of practical interest.

The exactions of machinists' unions have reached a point where they are beginning to interfere with the use of labor saving machinery. This applies of course to machinery requiring considerable repairing or renewing. When machinists could be had at reasonable wages, the saving effected through the displacement of ordinary labor by mechanical appliances made a margin of economy worth striving for. But with the reduction in machinists' work hours, advance in wages and excessive rates

demanded for overtime, the theoretical saving over the employment of hand labor is diminishing. In recent years the displacement of hand labor by machinery, which has brought with it the employment of skilled machinists to supervise operative details, has exerted no little influence in increasing the demand for such mechanics. If the arbitrary rules of the unions force much of a return to hand labor the lessened demand for machinists caused by dull times will be still more marked.

New England water powers are being prospected with a good deal of system with the purpose of developing them for electric purposes. The possibilities contained in the rivers of these States are considered to be tremendous, in view of the rapid progress which long distance transmission of electric power is making. Not a few New England manufacturers look to see the undeveloped and neglected water power of the section make up, to a considerable extent, for the distance from the coal mines, which is the chief disadvantage of manufacturing in the Northeastern States of the Union. In a country that is either mountainous or at least hilly in practically every section, reservoir sites may be found in plenty to provide against the times of low water, which is the chief drawback to the water power of New England as already developed.

CORRESPONDENCE.

The Largest Iron Casting.

To the Editor: In your issue of the 22d inst. you describe the "largest casting ever made in this or any other country." You are mistaken in this statement. Some 25 to 30 years ago the South Boston Iron Company of Boston cast several much heavier castings. These castings were 12-inch rifled cannon for the United States Government.

The rough castings weighed 123 tons—the iron was melted in three reverberatory furnaces of 40 tons capacity each, and the molten iron run direct from the furnaces to the mold, which stood perpendicular in a pit some 50 feet in depth.

WM. P. HUNT.

BOSTON, MASS., October 29, 1903.

The Australian Scheme of Bounties to Iron Works.

A cable dispatch from Melbourne, Australia, dated October 30, states that the Royal Commission of 12 members appointed to inquire into the feasibility of establishing iron works to be aided by the State is evenly divided, six favoring a system of bonuses and the other six against the project. The latter, representing the free trade party, point to the experience of Canada in this direction as discouraging and contend that the evidence fails to show the necessity of bonuses.

Each section of the commission has issued a report, the protectionist section accusing the Canadian and American manufacturers of reapers and binders of being guilty of extortion. They allege that machines valued at \$75 at the port of export could not be procured in Australia, prior to the imposition of the Federal tariff, under \$300, owing to the operations of the alleged American-Canadian combine.

The report recommends, in the event of the establishment of State-aided iron works, that the Government should be entitled to purchase them after a term of years.

The firm of H. Silberman & Co., scrap iron dealers, at 192 Scranton avenue, Cleveland, Ohio, have filed a voluntary petition in bankruptcy in the United States District Court. Their liabilities are \$197,573.97; assets, \$190,269.36. The firm were immediately declared bankrupt by Judge Wing, and the affairs referred to Referee in Bankruptcy Harold Remington. He appointed Na-

than Loeser and A. V. Cannon receivers. Their bond was fixed at \$50,000. Two members of the firm, Harry and David Silberman, also filed petitions in bankruptcy as individuals.

The United States Shipbuilding Company.

Abstract of the Receiver's Report.

Receiver James Smith's report of the United States Shipbuilding Company, which has been completed for filing with United States Circuit Judge Kirkpatrick in Trenton, makes sensational allegations of willful misstatement, falsification, swindling and fraud in the organization and flotation of the company, of attempts to mislead and deceive the investing public by erroneous prospectus statements and of a deliberate plan to wreck the company by withholding the earnings of the Bethlehem Steel Company. The report first takes up the incorporation of the original United States Shipbuilding Company, with \$3000 capital, in June, 1902, and the offer of Promoter John W. Young to sell to them several constituent plants.

The Bethlehem Steel Company Purchase.

In the case of the Bethlehem Steel Company the offer was made on condition that the stock of the company was to be deposited with the New York Security & Trust Company in trust. A trust deed was to be issued upon this stock, which should be a first lien upon the stock and a second lien upon the property and plants of the other companies; in this latter case a mortgage upon them to secure a bond issue of \$16,000,000 having priority. Holders of the Bethlehem bonds were to have a right to vote at stockholders' meetings on an equal footing with the stockholders of the Shipbuilding Company.

On the Bethlehem property \$10,000,000 worth of bonds were to be issued and a mortgage and single bond to be executed to the New York Security & Trust Company to secure these and an agreement executed between the Bethlehem Steel Company and the Shipbuilding Company by which the latter company should undertake to guarantee, so long as any of said issue of \$10,000,000 bonds are outstanding, that the Bethlehem Steel Company should pay dividends upon their capital stock at the rate of \$3 per share per year, aggregating an annual dividend contribution of \$900,000, and for that purpose the company would supply the Bethlehem Steel Company any business and means of earning to enable them to pay this dividend, should such become necessary, or advance sufficient money to make the dividend payment. Such advances might be credited on any work which the Bethlehem Company might thereafter perform for the company. So long as any of said issue of \$10,000,000 bonds remained outstanding the Bethlehem Steel Company should be protected in keeping on hand and maintaining cash or cash assets of not less than \$4,000,000 working capital, and the company should remain an independent and distinct corporation and not be merged in or consolidated with the Shipbuilding Company or any other corporation, unless such merger or consolidation should be consented to by the holders of not less than 75 per cent. of the outstanding bonds. By this agreement, the receiver contends, the United States Shipbuilding Company were placed entirely in the control of the Bethlehem Steel Company and their principal stockholder, Charles M. Schwab. Mr. Young was to turn over to the Shipbuilding Company, in addition to the capital stock of these plants, \$1,500,000 for working capital and \$1,500,000 in bonds of the United States Shipbuilding Company to be held as treasury assets and disposed of for working capital or other purposes of the company, and would accept in full consideration \$19,998,500 in preferred stock and \$24,998,500 of the common stock of the company, \$16,000,000 par value of first mortgage 5 per cent. sinking fund 30-year gold bonds, secured by a mortgage upon all the property and plants of the companies outside of the Bethlehem Steel Company, and \$10,000,000 in 5 per cent. 30-year gold bonds secured by a mortgage upon the Bethlehem Steel Company.

Strong Charges of Misrepresentation.

Upon the receipt of this offer, says the receiver, the directors above named, holding no stock whatever in the company, but at most a mere substantive right, by assignment, to one share each, adopted a resolution which in effect accepted the offer as made and increased the capital stock from \$3000 to \$45,000,000, \$20,000,000 preferred and \$25,000,000 common; executed the \$10,000,000 mortgage on the Bethlehem plant and the \$16,000,000 mortgage on the other plants as specified, and delivered the corresponding bonds and all the stock except 15 shares of common and 15 of preferred to Young. This action was ratified by the stockholders on July 31, 1902, and between August 5 and 12 the transaction was consummated by the delivery of the capital stock and plants of the constituent companies. Leases were later executed conveying the plants to the companies for purposes of operation, the profits to be turned into the combined treasury.

The resolution of the Board of Directors accepting Young's offer was stated by the board in its minutes to be based upon reports from W. T. Simpson and Riddell & Common, accountants, on the condition of the business of the several companies mentioned in said offer, excepting the Bethlehem Steel Company. This report is alleged to have certified, among other things, that the contracts of the constituent companies for construction then in hand amounted to over \$36,000,000, that the estimated net profits thereon had been calculated at over \$5,000,000, and that further business should result in an average annual profit of \$2,225,000. With reference to the Bethlehem Steel Company the minutes of the board recite that Jones, Caesar & Co., chartered accountants, had been investigating the affairs of the Bethlehem Steel Company, and had made a report that the company were earning \$1,800,000 per year; that they had a working capital of over \$4,000,000 and that they had contracts in hand sufficient for their full running capacity for three years. "In reliance upon these alleged reports, and without knowledge of, or investigation into, the merits of the properties," Mr. Smith says, "The resolution in question was adopted. A comparison of the figures alleged to have been relied upon by the Board of Directors in accepting the offer with the true figures ascertained from an examination of the subsidiary companies subsequent to the purchase of said plants, disclosed so great a variance as to impel the belief that the figures contained in the minutes were willfully misstated. It is extremely doubtful whether any report was submitted by any accountants made as of that time as the minutes recite."

A letter purporting to be signed by Simpson and Riddell & Common, dated January 24, says Mr. Smith, would seem to serve as a basis to a certain extent for the allegation in the minutes, but the examination of these accountants must have been of the most superficial kind. "The letter in question makes such exaggerated representations with reference to the profits, present and prospective," he declares, "as to make it absolutely worthless as a guide in ascertaining the real condition of the plants. It is entirely refuted by their later reports." In these later reports, he states, the \$5,000,000 of profits dwindle to about \$1,000,000, and the estimated average annual profits of the Bethlehem to not more than \$1,400,000. Actual profits were much less, however, the first year's earnings of the constituent companies, exclusive of Bethlehem, not exceeding \$833,458. A great reduction in management expenses, the report states, might have been expected from the combination, but this did not come to pass, one reason for it being found in the arrangement to engage a number of persons "at salaries in many cases greater than the earnings of the subsidiary companies would warrant."

"The real reason why the earnings fell below the anticipated profits," the receiver says, "was because previous alleged earnings had been figured upon a percentage of completion of contracts, which percentage, in many instances, was erroneous."

Financial Condition of Constituent Companies.

Actual earnings of the Bethlehem Steel Company, instead of \$1,400,000 per annum, were for the fiscal year

of 1900-1901 \$381,403 and for 1901-1902 \$978,743, and their working capital, instead of being over \$4,000,000, was, at the close of the fiscal year 1902, \$250,000 less.

The figures for working capital of the other constituent companies, given as \$3,278,798, were subsequently found to be excessive in the case of nearly every company, the shrinkage amounting to \$1,450,367.

"It appears," Mr. Smith writes, "that with the exception of the Union Iron Works, the subsidiary companies, taken together, had absolutely no working capital; but, on the contrary, their liabilities exceeded their resources in the sum of \$294,719.33." The following was the condition of these companies at the time of their purchase:

Deficit.	
Bath Iron Works.....	\$3,518.74
Crescent Shipyard Company.....	403,192.28
Harlan & Hollingsworth Company.....	73,813.44
S. L. Moore & Sons Company.....	5,039.27
	<hr/> \$485,563.73
Surplus.	
Eastern Shipbuilding Company.....	\$1,391.34
Hyde Windlass Company.....	189,453.06
	<hr/> 190,844.40

Net deficit, being excess of liabilities over assets.. \$294,719.33

The Union Iron Works, it was found, had a working capital of \$2,123,150.

"As the principal part of the alleged working capital above mentioned was confined to the Union Iron Works," he concludes, "it will appear that so far as the remaining companies are concerned, when taken over by the United States Shipbuilding Company, they not only had no working capital, taken collectively, but were in immediate need of financial assistance.

"From the foregoing facts, viewed not only in the light of subsequent developments, but also from the figures obtained at the time of the incorporation of the United States Shipbuilding Company, it appears to have been the intention of those responsible for the statements and figures alleged to have been relied upon to mislead and deceive the investing public and the then present and future creditors of the company.

The Receiver's Recommendations.

A very important part of the report consists of the receiver's recommendations, which are as follows:

1. That in order to avoid depreciation by disuse, and because of the existence of controversies as to the validity of the encumbrances upon the premises, the Crescent Shipyard be sold free and clear of all such encumbrances as soon as the work now in contemplation is completed.
2. That similar action be taken with reference to the plant of the Harlan & Hollingsworth Company, Wilmington, Del.
3. That as soon as the debts of the company shall have been ascertained suit be instituted against all persons who received the stock of this company without paying full value thereof to recover from them such an amount as shall be necessary to pay said debts in full, under Section 21 of an act of the Legislature of the State of New Jersey entitled "An Act Concerning Corporations" (Revision of 1896).
4. That suit shall be instituted against the Bethlehem Steel Company to procure the appointment of a receiver and to compel the appropriation of the earnings of that company by way of dividends on the stock.

At the recent annual convention of the International Association of Superintendents of Bridges and Buildings, held at Quebec, the following officers were elected for the ensuing year: President, Arthur Montzeheimer, chief engineer E. J. & E. Railroad, Joliet, Ill.; first vice-president, A. Shane, T., St. L. & K. C. Railroad, Frankfort, Ind.; second vice-president, C. A. Lichty, C. & N. W. Railroad, Fond du Lac, Wis.; third vice-president, J. B. Sheldon, N. Y., N. H. & H. Railroad, Providence, R. I.; fourth vice-president, J. H. Markley, T. P. & W. Railroad, Peoria, Ill.; secretary, S. F. Patterson, B. & M. Railroad, Concord, N. H.; treasurer, C. P. Austin, B. & M. Railroad, Medford, Mass. The next convention will be held at Chicago, October 19, 1904.

The N. A. Lombard Company of Worcester, Mass., manufacturers of woolen machinery and molding machines, have gone into the hands of A. H. Howard of Worcester, Mass., as receiver by order of the Superior Court of Massachusetts. The immediate cause of this action was an attachment placed at the instance of G. S. Harwood & Sons of Boston, who are creditors. The company owe between \$20,000 and \$25,000.

American Structural Steel Company.

The American Structural Steel Company, organized in Pittsburgh some months ago, have placed in partial operation their new plant at Carnegie, Pa. The main building is 250 feet; the fabricating shop occupies 60 feet of the width of the main building extending through the entire length, while the other parts are occupied by blacksmith, machine and templet shops, boiler, engine and toilet rooms. The plant is so arranged that the initial work is done in the north end of the building and carried by a continuous operation without rehandling to the south end where the riveting and finishing are done and the product is loaded on cars for shipment. All the machinery is electrically driven by Crocker-Wheeler motors. In the unloading yard is located a bending and straightening machine made by the Pittsburgh Mfg. Company, and a 10-ton Browning electric traveling crane with a 75-foot span and 240-foot runway.

One 10-ton and four 13-ton Browning electric traveling cranes are located in the building and operated by hand from the floor, running from one side to the other. The machinery, consisting of angle, plate and bar shears, punches, coping machine and a rotary planer, was manufactured by the Cleveland Punch & Shear Works Company. Allen pneumatic riveting machines are used in the finishing department. The blacksmith shop contains an 850-pound Bell steam hammer. A 25 horse-power motor is connected to the line shaft in the machine shop, which also contains a bolt cutter, radial drill, upright drill and three lathes. The power plant is in duplicate, containing two 150 horse-power boilers, made by R. Munroe & Son; Stillwell-Bierce & Smith-Valle feed water heater; two 150 horse-power Harrisburg engines, direct connected to two 250 voltage Crocker-Wheeler generators, and a Rand compound air compressor. A 10-ton locomotive crane, made by the Industrial Works, Bay City, Mich., is located in the yard. The office building is 290 x 96 feet, one story. The company also maintain an office in the Times Building, Pittsburgh, and are locating branch offices, in connection with the Columbia Fireproofing Company, throughout the country. The monthly output of the plant is rated at 1200 tons. The company have a paid up capital of \$200,000, and are composed of the following: C. A. Balph, president; J. T. Joyse, vice-president, and H. B. Shidle, secretary and treasurer; who with the following compose the Board of Directors: George V. Milliken, Scott A. White, George W. Miller and John Kearns.

Tool Steel in Seamless Cold Drawn Tubes.—The Ellwood Ivins Tube works, mills at Oak Lane Station, Philadelphia, advise us that they have succeeded in producing tool steel seamless tubing. The tubing is made in sizes from about 2 inches in diameter down to small sizes of 1-64 inch, in all thicknesses of walls. The tubes are most accurately drawn both as to internal and external diameters, and have a polished surface. So great is the precision that it is claimed that no work is required for fitting the tubes after they are made in sizes ordered. It would seem that this new product in tool steel would eliminate the necessity of boring out solid rods or bars where either short or long hollow articles were required, such as cutting dies, bushings, drills, &c. These steel tubes take a high temper at low heat. The same mill produces soft mild steel seamless tubing in all the regular sizes. They claim unusual precision and nicety of finish in their product, accepting orders in exactness to 1-1000 inch. The Ellwood Ivins Tube Works claim to be the first in America to produce a cold drawn seamless steel tube, and have been established for many years.

American Steam Gauge & Valve Mfg. Company have again been compelled to seek new quarters owing to the increase of their business, and are at present removing their entire plant and offices from Bismark street, Roxbury district, to a large brick building, 208-220 Camden street, Boston, Mass. The building has floor space of 85,000 square feet. The Mowry & Phillips foundry department will also be removed from South Boston and every

branch of the business consolidated at the Camden street factory. The new plant will afford them more than double the present capacity, and will be employed in producing their valves, gauges and indicators; also special metals and foundry work in the Mowry & Phillips department.

Labor Notes.

Samuel J. Parks of New York, the walking delegate of No. 2 Local Union of the International Association of Bridge and Structural Iron Workers, who has made himself notorious for the past year, was last week for the second time convicted of extortion. Other indictments of the same character, as well as one for perjury, are awaiting trial. From present appearances Mr. Parks seems to have been eliminated from the New York building trades troubles.

The International Association of Bridge and Structural Iron Workers voted to declare a national strike last week for the purpose of injuring the business of the New York members of the Iron League, but on Saturday President Frank Buchanan, who favors peace, announced that the strike order had been stayed in the hope of a better solution of the difficulty. The declaration of a national strike was treated as a sensational matter by the daily press, but was regarded with indifference by most contractors. Individual members of the union are reported to be greatly disheartened over the protracted fight in New York, and are quoted as saying that if it lasts much longer they will probably be going back to work at \$3.50 a day instead of the old wages of \$4.50.

Four labor leaders in Rochester, N. Y., have been indicted on the charge of conspiracy. They are Francis J. McFarlin, walking delegate of the Carpenters' Union; T. M. Guerin, first vice-president of the National Association of Carpenters' Unions; William Challice, president of the local union, and Michael O'Brien, president of the district council. There is a separate bill against McFarlin, charging coercion. Corruption, fraud and malicious boycotting are charged on almost every page of the indictment.

After several conferences between President James O'Connell of the International Association of Machinists, the International Executive Committee of the association and Secretary Hunter of the New York Metal Trades Association, it has been decided by the union to drop the strike of the machinists in the shipyards. The strike went into effect last May, and was for a minimum wage scale of \$3 a day. The strikers will go back to work under the old conditions where places can be found for them.

What promised to be a serious labor disturbance developed on the power development works on the Canadian side at Niagara Falls, on Monday morning, at which time a new schedule of wages went into effect. Up to and including Saturday last the various contractors had been paying 17½ cents an hour, but on Saturday at least two of the contracting parties posted notices that beginning Monday the scale of wages would be reduced to 15 cents an hour for laborers. When Monday came between 700 and 800 men refused to go to work at the reduced rate. They marched through Victoria Park, driving men who were willing to work away from the jobs. The Ontario Power Company, the contractors on the wheel pits of the Canadian Niagara Power Company and the Toronto & Niagara Power Company, the Niagara Construction Company, the Gordon Construction Company and the Jenckes Mfg. Company had men go out.

Among reported projects to develop water power for electric purposes is one at Terry's Bridge, Thomaston, Conn., and another near Marshfield, Vt., where Molly's Falls may be developed and large storage reservoirs established. A part of this power is already developed for electric purposes.

Consulting Engineers.

BY EGBERT P. WATSON.

A general misapprehension exists as to the nature of a consulting engineer's business, a good many who should be better informed fancying that they are at liberty to enter his office and question him upon points in his profession relating to investments or machinery which they are interested in, and obtain information of value to them gratuitously. Reflection will show that an engineer's education is an expensive one, and if he places it at the service of casual inquirers he must be paid for it the same as any other professional man is. No business man would expect to walk into a lawyer's office and consult him offhand, as I may say, upon legal matters without first offering a retainer, but this is exactly what is done to consulting engineers in far too many cases. An example is found in this instance, which is within my personal knowledge. An engineer received a telegram asking him to be at the office of a well-known firm at a certain hour the next day, and the appointment was made by return wire and kept by the engineer. It appeared that certain gentlemen wished to invest in a patented device, but before doing so needed the advice of an engineer of experience as to its novelty and desirability. The engineer looked at the engraving of the device, which was all that was given him, and recognized a well-known arrangement which had been patented a great many years; the alleged improvement consisted in placing a globe valve at a certain place where there had been none in the original patent. That was the sole change which had been made. He pointed this out to the parties present and supposed that would close the consultation, but he was mistaken in this, for the prospective investors wanted a test made of the claims put forth by the contriver of the globe valve annex. To do this it was necessary to go to a distant city, involving an outlay of time and money, which the engineer could not conscientiously advise the investors to incur, and he laid these facts before them: That the device was well known in the trade as the most wasteful and uneconomical of its kind, only applicable to certain situations where nothing else could be used, and could not compete with many other systems for the same duty invented since it was; it did not require any testing as to the value of the additional globe valve, because the latter did not affect the principle at all, but was merely a convenience for the operator of the machine. The engineer spent half a day going and coming and trying to convince the would be investors that there was nothing in the scheme of any commercial value, but failed to make any impression upon them. The inventor said thus and so, and claimed this and that, and they wanted his assertions proven or disproven. The prospective investors seemed to be anxious to throw away money and, finally, the engineer declined to have anything to do with the proposition and departed. No request was made to him to send a bill for the service rendered, and, for certain reasons connected with the parties who made the appointment for the engineer, he never made any claim for compensation, but the prospective investors were men of position and prominence in business circles, and should have known that an engineer could not spend half a day in matters of interest to them solely without being paid for it, but the case probably never occurred to them in that light. They would willingly have paid the engineer a round sum to test the apparatus, but this he could not conscientiously do, for the reason that he could not render an equivalent for the fees which would have to be paid him.

The proper course in all such cases for engineers to follow is to state their charges for consultation in advance—so much an hour, generally—leaving it open for applicants to accept or reject the terms at their pleasure. This was not done in the case cited for the reason previously mentioned.

Of the instances which transpire in the experience of consulting engineers in extensive practice it is necessary to mention one, which is the temptation to render verdict to suit the views of those who retain them for

stock jobbing purposes. The fees obtained for this kind of work are enormous—far beyond those given in regular calls, but no man who values his future practice, to say nothing of moral questions, will for one moment entertain propositions of this character. Machines and processes are promoted which the devisers of them know are visionary; they are good enough to go before the public in advertisements, but they are worthless for investment. So to give some sort of an honest appearance the opinions of engineers are procured, and no doubt have their effect among a certain class, who cannot detect that the engineer's verdict as published is wholly noncommittal and establishes nothing whatever. It is only a few months since such schemes were promulgated all over the country, but not one of them ever materialized into a staple industry.

Sometimes in the course of events it happens that professional men in other lines of business connected with engineering affairs want advice in that direction. When it is a matter of a few minutes' consultation it is freely given without any compensation, but such cases assume quite a different aspect when a dozen or more blue prints are produced, with a request that the engineer "go over them," whatever that may mean in connection with plans, and see if they are all right. Curious as such a proposition may seem from one professional man to another, it is not at all an unusual one. It never seems to occur to an architect, for example, that an engineer cannot "glance" at one blue print and read it critically with satisfactory results, much less half a dozen. Apparently it is thought that an engineer can "cast his eye" over plans and detect errors as readily as he can observe the sun at noon day, and the architect would probably appreciate the difficulties in the way if an engineer proffered plans of a country house and requested the architect to give an opinion as to their correctness in a few minutes' examination. Reading blue prints takes time: comparisons must be made, one with another, as to their relations and possible variations, and the expense of so doing increases with every tick of the clock, but it is generally felt to be an unreasonable charge when the engineer states this fact before hand.

It is not uncommon, either, for persons who contemplate the erection of a large building to "drop in," as the phrase is, and ask for estimates of the cost of piping it for steam heating, with only the vaguest idea of what they want to do, or even what should be done. Their expectation is, apparently, that the engineer will obligingly drop hints as to the methods which should be adopted and interest himself generally in the proposition, "without fee or hope of reward," but this is an erroneous idea. Engineers are like all other business men—their time is valuable according to the demands upon it, and while a young man with no connection to speak of, who has his way to make, can agree to furnish estimates free of charge, the older man, whose time is fully occupied with large affairs, will not give them at all, and must be specially retained even to consider them.

While this article was being written I happened to see the issue of October 2 of *Engineering*, London. The leading editorial in it discusses the subject of "Engineers and Consulting Engineers" in very much the same aspect of the previous lines, with but slight differences, these last having reference to points not covered by myself. Alluding to the employment of a consulting engineer in conjunction with the resident engineer of an established concern, *Engineering* says:

His employers recognize that he cannot, in their employ, have acquired any experience in large undertakings, so their next step is to provide him with a consulting engineer to keep him straight. Some employers feel that this covers all contingencies that may arise. They deliberately decide to have a man without special knowledge in the premises of what is to be done, and no experience whatever in it, supplemented by a consulting engineer with all the qualities which their own man lacks, but only such second-hand acquaintance with all the circumstances as he may be able to derive from the zealous but inexperienced engineer. How is it possible to obtain good results? The most inexperienced employers should have doubts as to the wisdom of such a course. They imagine that they get all the advantages of a first-class engineer at much less expense, but leading engineers can recall many instances where large sums have been spent in this way without securing anything at all. Forty or fifty drawings are presented to him, which he can form only a

general opinion of, but in spite of this disadvantage he will probably be able to point out defect after defect in them, to remedy which would probably require the work to be redesigned. Who shall put the drawings right? Not the consulting engineer, for he is engaged only to criticize and design; his advice may be sound, but the way that the engineer has attempted to apply it may be quite wrong. As with the drawings so it is with the specifications, the greatest experience is required to have them correct in order to describe the way in which the work shall be carried out. Who shall draw the specifications and estimate the quantities? Clearly the engineer, and according to his ability so will be the work. Boards with wide experience know that first-rate work can only be had from first-rate men, and this should guide them in the choice of their engineers and contractors.

When a business outgrows its facilities it is necessary to provide more room. One way, and the most common one, is for two or three to gather together, survey the premises, and decide in a few minutes, or possibly hours, what is the best that can be done with the sites at disposal.

The advice of the heads of departments is sometimes asked, but not always acted upon, one reason for this being that each head wants the space so allotted that it will be the most convenient for him; and after all have been heard the principals usually decide upon the plan that will cost the least to execute at the present time. The result is that, having no knowledge of what others have done under similar circumstances, there is neither beginning nor end to the complications which ensue. The work has been improperly set out, and the proprietors pay tax on it every day that the shop runs. Stock comes in anywhere, everywhere, and is carried back and forth over the same ground several times, and, often enough, there is no place to deliver the stock adjacent to the machines. It is a fact that in one of these home made shops, so to call them for want of a better term, the front of the shop, or what should have been the front, was in the rear, the only access to it being through a comparatively narrow causeway about 4 feet wide. No team could get into it, and if one horse was used there was no room for it to turn. The disadvantage of having the front in the rear could be remedied by changing the machines, and of course the run of the pulleys and belts which drove them. The cost of this can be imagined, for it was a large place, but thereafter it was possible to deliver the stock at the first machine to use it and run the work right through to the last machine; even then it had to be transported some distance to the packing room, adding materially to the cost, to no purpose whatever if the shop had been properly planned at the outset.

Right here a word in season should be uttered, and this is that there never was a system of timekeeping devised which recorded all the time spent in doing any given job at all stages of its progress; some minutes and seconds leak out and are lost. In automatic machines this can be done as regards the time spent in the actual number of pieces produced in the recorded time upon the time slip, but who knows what the elapsed time was? An overseer cannot stand by the side of the machine and snap a stop-watch on it for every job. The time slip says that it took so long to do such work; whether the machine was actually shaping the detail all that time must be assumed. Unless there is a clock which stops when the machine stops, and starts again when the machine starts, the elapsed time is a matter of conjecture. Also, when machines are not automatic there is a leakage of time not easily detected. Half a day is charged to turning certain shafts; when the actual time charged is divided by the number of shafts it will be found that it took an excessively long time to turn each shaft. The rest of the time has taken wings and flown somewhere. It took, doubtless, three-fourths of the time to do the work and the other fourth to do nothing that was profitable to the concern. Profit and loss catches much of it.

If the task of designing the addition to the shop before mentioned had been given to a competent consulting engineer of long experience it would have been much more profitable to the proprietors. Such a man, from wide reading and observation of what is doing and has been done all over the world, is in a position to start right and keep on until the work is completed, as it will be to the satisfaction of all concerned if the engineer is given

a free hand. He knows what he can do it for and the proprietors know what it will cost them, so the transaction is complete from any point of view. It is too often the case that proprietors fancy that they can save the expense of a consulting engineer by making the changes themselves, but when this is done it is not only the first step which costs, but all the subsequent steps.

Remarkable Test of a Metal Ceiling.

The S. Keighley Metal Ceiling & Mfg. Company, 819-823 Locust street, Pittsburgh, Pa., have had a remarkable experience with one of their ceilings. They advise us that on a four-story building in that city in which their lock joint ceiling was erected on the first floor, a fire occurred in the third and fourth floors, during the progress of which a great amount of water was necessary to be thrown into the upper stories to extinguish it. Their lock joint construction was so effective in this case that the water had no passage through and accumulated above the ceiling, and not being able to escape, the weight became so great that the entire ceiling was pulled off, not from the furring strips, but the eight penny nails holding the furring strips in place were drawn out of the joists and the ceiling came down as one sheet to the floor for about 40 or 50 feet of the length of the room and for its full width. Their claim for this construction has never been that it is water tight, but that it is air tight; the application of the finishing coats of paint closing up the seams after they have been tongued up with their improved tongs, sealing these joints and making them practically air tight in contradistinction from the crude open joints of the old fashioned lap or slip joint form.

PERSONAL.

The friends of Albert T. DeForest, formerly district manager of the American Steel & Iron Company at Cleveland, gave him a farewell dinner before his departure for the Pacific Coast. He was presented with a traveling bag and a gold watch.

Samuel B. Sheldon, who succeeded George Thorp as superintendent of the Joliet works of the Illinois Steel Company, has tendered his resignation, to take effect November 15. His successor has not yet been selected. Mr. Sheldon goes to the Lackawanna Steel Company at Buffalo, N. Y.

Frank M. Twitchell of Union City has been elected president of the Omega Steel Company of New Haven to fill the vacancy caused by the resignation of C. J. Benham. S. H. Roseberry is treasurer.

Charles T. Bishop, formerly with Ladenburg, Thalmann & Co., New York, and late paymaster of the United States Naval Service, has been appointed auditor of the H. W. Johns-Manville Company, 100 William street, New York.

The Tin Plate Mills.—A semiofficial report of the condition of the tin plate mills throughout the country was recently issued at Pittsburgh. The first figure given is the number of mills in each plant, and the second figure is the number in operation. The statement is as follows: "Independent—Alcania, 3, 3; Carnahan, 6, 3; Griffith in Waynesburg, 9, 0; Griffith in Washington, 2, 0; Jackson, 8, 4; Lalance & Grosjean, 4, 4; National Enameling & Stamping Company, 6, 6; Pope, 12, 7; N. & G. Taylor, 8, 4; Washington, 6, 3; Wheeling, 4, 4; McKeesport, 10, 10. Total number of mills, 78; operating, 48. American Tin Plate Company—American, 28, 28; Anderson, 7, 0; Beaver, 7, 0; Cambridge, 6, 0; Chester, 7, 7; Crescent, 6, 0; Falcon, 6, 0; Humbert, 6, 6; Irondale, 4, 0; La Belle, 10, 0; Laughlin, 23, 0; Monongahela, 8, 8; Morewood, 8, 8; Champion, 6, 0; Monessen, 24, 24; Greer, New Castle, 20, 20; Pennsylvania, 6, 0; Pittsburgh, 7, 3; Sharon, 20, 15; Shenango, 30, 0; Star, 8, 0; United States, Demmler, 11, 11. Total, 258; operating, 130. These figures show that out of a total of 336 tin plate mills in the country, 178 are in operation."

Trade Publications.

Chilled Castings for War and Peace.—One of the famous works of Fried. Krupp Aktiengesellschaft is the Gruson plant at Magdeburg-Buckau, Germany, originally established by the late Hermann Gruson and subsequently purchased by Krupp. The works, which have done so much to develop the use of chilled castings for armored turrets, have since taken up the Griffin methods for the manufacture of car wheels and have always done a good deal in crushing machinery in chilled rolls and a great variety of special machinery. The handsomely printed pamphlet recently issued describes and illustrates the plant and equipment.

Castings.—The Spicer Mfg. Company of New Philadelphia, Ohio, make light and heavy castings, particularly for rolling mill work, and also build special machinery to order. Their standard tin plate truck has a platform 48 inches long by 24 inches wide. The frame is of seasoned hickory with solid 1-inch top. The forward wheels are 8 inches in diameter and the rear 12 inches, with 2½-inch face. The front hanger is made in the form of a truss of ¼ x 3 inch iron, and is very strong and durable.

"Coal, Cinders and Freight" is the title of a handsome catalogue received from the Link-Belt Engineering Company of Philadelphia and the Link-Belt Machinery Company of Chicago, dealing with the economical handling of these materials. The cost of handling coal by a properly designed mechanical station is from 60 to 70 per cent. less than by the old method of unloading on trestles and delivering coal to tenders in barrows. While the actual cost in any case depends largely on local conditions, it may be said in a general way that where drop bottom or side dump cars are employed the labor cost should not exceed 1 cent per ton of coal, and is often less. The catalogue presents many most excellent half-tone engravings of railroad stations for handling coal and cinders, steamship loading plants and freight elevators and conveyors.

Sheet Metal Stampings.—The Rochester Stamping Company of Rochester, N. Y., describe their high grade metal specialties in copper, brass, tin and steel, in a very attractive catalogue. The articles include among others many patterns of coffee pots, chafing dishes, tea sets, serving trays, boilers and cuspidors.

The Universal Grinder, built by the Greenfield Machine Company of Greenfield, Mass., is intended to meet the demands of manufacturers who require, at a moderate cost, a medium size, accurate machine capable of doing a large variety of work economically. It is adapted for grinding to size, straight and taper arbors, cylindrical or conical work upon centers or in the chuck; for sizing internal work, and for sharpening straight, taper and rose reamers. It may also be used to advantage on such work as milling cutters, taps, gauges, dies, &c.

Corliss Engines.—The Bates Machine Company of Joliet, Ill., have prepared a large and finely illustrated catalogue dealing with their complete motive power plants and air and gas compressing machinery. Their Bates-Corliss engines are built in two styles—box girder, adapted for all ordinary and lighter service where the steam pressure does not exceed 125 pounds and where the service is such as not to call for an extraordinarily heavy frame. Their extra heavy duty engine is designed for all duties where the steam pressure is high and where the service is of a severe nature, such as in rolling mill work. These engines are the result of long and wide experience and are noted for their high economy.

Foundry Supplies.—The S. Obermayer Company, Cincinnati, Chicago and Pittsburgh, have celebrated their thirtieth birthday, which occurred in September, by issuing a historical issue of their Obermayer Bulletin. The growth of the company is followed from their establishment by the late Simon Obermayer in a modest building in Cincinnati, up through the various developments, until they are shown to have to-day a very large plant in Cincinnati, another in Chicago, a third at Larimer, Pa., and a large warehouse in Pittsburgh, together with regularly established sales offices in all the large cities in the world where iron and brass are molded. Views of the different plants are given, together with portraits of the officers and sales agents of the company. The S. Obermayer Company handle everything needed in a foundry, covering both equipment and supplies.

Belted Direct Current Generators.—The Fort Wayne Electric Works, Fort Wayne, Ind., have issued under date of September 15 their Bulletin No. 1048, relating to types MP, LB and MPL of belted direct current generators. The Bulletin gives a short description of these types of machines, stating their sizes, capacities and limitations. The description closes with the statement that machines of these types in sizes of from 1 to 300 kw. capacity are in operation in all sorts of locations from Maine to California, furnishing light and power to a wide range of industries. The body of the Bulletin consists of 15 pages classified by States and naming for each the various towns and companies by whom machines are in use.

Transformer Insulation.—An article upon this subject by Edward A. Wagner, published in the *Western Electrician* of June 6, 1903, and reprinted and distributed as No. 5003 of the publications of the Fort Wayne Electric Works, Fort Wayne, Ind.

Air Compressors.—The 1903 temporary edition of Catalogue No. 33B, issued by the Ingersoll-Sergeant Drill Company, 29 Cortlandt street, New York. The present edition contains almost a full set of new illustrations representing later types and installations of machines built by this company. The de-

scriptive data is practically the same as in the previous edition. The line of machines treated is very complete and so extensive as to preclude the possibility of individual references here. As is well known, the conditions existing in almost all classes of service are provided for by specially designed types, in all of which, however, certain recognized features of excellence are included. One peculiar feature of the Ingersoll-Sergeant compressors, and one for which many advantages are claimed, is the location of the air inlet valves directly within the piston, to the interior of which exterior air finds its way through a tube passing through the back cylinder head much after the fashion of the tall rod in a steam engine. This construction permits the reduction of clearance spaces to a minimum, thus largely removing one of the principal difficulties in the economic compression of air.

Hand Power and Electric Cranes.—Bulletins G, H and J, issued by the Cleveland Crane & Car Company, Wickliffe, Ohio, and describing, respectively, the Cleveland hand and electric jib, post and car crane types, the Cleveland hand power traveling cranes and the Cleveland electric traveling cranes. Illustrations and descriptions of these various types are presented, accompanied by data in reference thereto.

Quintuplex Electric Pump.—"Pump Data," Bulletin No. 3, of the Allentown Rolling Mills, Allentown, Pa. The Quintuplex pump is designed to deliver water in an absolutely uniform stream; to accomplish this result five single acting plungers are used, operated from one crank shaft, on which the several crank bearings are spaced 72 degrees apart. It is stated that the resultant action gives a continuous stream without the aid of vacuum chambers, alleviators or compensating devices. The pump is driven by a slow speed motor, mounted upon an extension of the pump base and connected to the crank shaft by single reduction gearing, thus forming a self contained machine. These pumps are constructed in capacities of 35 to 400 gallons per minute, the corresponding water cylinder dimensions being, respectively, from 2½ x 7 inches to 6 x 12 inches. It is claimed that these pumps may be run with perfect safety at high speed, thus allowing for large overload capacity in cases where, as usual, the normal work is done at slow speed.

Punches, Shears, Rolls, &c.—In the 1903 catalogue of heavy metal working machinery manufactured by the Cincinnati Punch & Shear Company, Cincinnati, Ohio., are included several machines not shown in previous editions; some of them are entirely new and others are alterations of older types. The line includes single and double punches, driven by direct connected engines and motors, as well as by belt power. Plate, pack and sheet shears in great variety, suited for all thicknesses of metal up to 1 inch and for widths from 36 inches up to 10 feet, are illustrated and described. Light and heavy plate bending rolls, engine, motor and belt driven, are also shown. A page is also devoted to the eight-roll straightening or leveling machine, and one to the improved sheet doubler made by this firm.

Forging, Bending and Drilling Machines.—The Ajax Mfg. Company, Cleveland, Ohio, have issued the 1903 edition of the "Ajax Brown Book," illustrating the line of heavy forging, bending and drilling machines which constitute the most important portion of the company's product. New machines shown in the revised catalogue include a special axle machine, designed to meet the demand for a large die opening, such that collared axles may be withdrawn after the upsetting operation. There is also shown an automatic feed rivet machine, designed to be used in conjunction with an especially long heating furnace, through which extreme lengths of bars may be fed automatically into this machine. It is stated that this process enables the increase of output of rivets and track bolts to nearly double that by the ordinary means. New types of forging rolls, as well as some alterations of the older machines, are also illustrated and described. The catalogue closes with several pages of tabular data relative to weights and dimensions of iron, requirements for making of square and hexagonal bolt heads, standard upsets, &c. A 36-page pamphlet accompanying the catalogue gives an extended list of users of Ajax machinery.

Steam Pumps.—Catalogue No. 12 of the Blakeslee Mfg. Company, Duquoin, Ill. This catalogue relates entirely to the various types of single cylinder double acting steam pumps made by this company. Duplex pumps are covered by previous Catalogue No. 11. Included in the list of single acting pumps shown and described are the standard forms for boiler feeding and general service, as well as several special forms, including air compressors, vacuum pumps, hydraulic or high pressure pumps, and pumps mounted in connection with steam boilers either upon stationary bases or upon wheels. The Blakeslee jet pump is briefly treated. The Blakeslee Company also issue in pamphlet and leaflet form much detailed information relative to various single items of its product, such as lists and prices of repair parts, &c.

Locomotive Cranes.—Bulletin No. 1, 1903, of the Brown Hoisting Machinery Company, Cleveland, Ohio, giving illustrations and general descriptions of a large variety of light and heavy locomotive cranes for operation by steam and by electricity. Two features in this catalogue are worthy of particular notice. First, locomotive cranes for ore handling show an entirely new application of the "Brownhoist" 10-ton locomotive crane. It is stated that since the introduction of the Brown patent grab bucket a large demand has arisen for locomotive cranes equipped with this bucket for use in handling iron ore. The combination of the flexibility of a locomotive crane, with the provision for automatically shoveling and rehandling iron ore, is said to have been recognized by some of the largest steel plants in the country, as shown by their orders for cranes of

this type. The second feature of special importance is the electrically operated locomotive crane, made in different forms and taking current by trolley from an overhead wire, exactly as in street railway work. This is a novel and interesting point as being another instance of the present tendency to supersede steam by electric power wherever possible.

Metal Gaskets. as made by the United States Indestructible Gasket Company, 8 South William street, New York, are being brought to the notice of interested parties by means of a folded mailing card, giving, besides a description of the gaskets, a list of circular sizes from $\frac{1}{2}$ to $4\frac{1}{4}$ inches diameter. Solvo boiler cleaner and scale solvent is also mentioned on the card, this compound being a crystal powder sold by the Solvo Company of America at the above address.

Steam Specialties for heating and power plants, as manufactured by Klipfel & Thomas Company, 74-76 West Lake street, Chicago, and 95-97 Liberty street, New York, are illustrated and described in a 24-page, 5 x $7\frac{1}{2}$ inch pamphlet catalogue. The K. & T. devices shown include pressure regulating valves of various types, blower engine regulating valve, improved continuous discharge steam trap, back pressure valves of several forms, automatic relief valves for condensing engines, combination automatic relief and noiseless back pressure valve, automatic stop and check valve, balanced valve, automatic pump regulator and condensation receiver, automatic radiator air valves, and Bourdon spring steam gauges. A feature is a full page illustration representing the cross section of a modern large power station and showing the locations of the several K. & T. specialties throughout the plant.

Mercury Vapor Lamps.—The Cooper Hewitt Electric Company, 220 West Twenty-ninth street, New York, has just issued a 28-page, 6 x 9 inch pamphlet, relating to the Hewitt mercury vapor lamp, which has lately been developed, and to which considerable attention is being attracted. The lamp and its light, with their applications to general illumination and to photography, are quite fully and clearly set forth, the descriptive text being accompanied by numerous illustrations. The Hewitt lamp consists of a glass tube of any practicable length, into each end of which is sealed an electric conductor wire connected to electrodes within. Either one or both electrodes must be of mercury. The tube is brought to a high degree of vacuum and sealed, so that it contains little else than the vapor of the mercury electrode. Passage of the electric current through this vapor causes the emission of a brilliant light of a peculiarly bluish color. The light is stated to be steady and strong, making the lamp superior to the arc lamp where flickering and deep shadows are undesirable. The light being rich in the actinic rays, so highly valued in photography, the Hewitt lamp is held to be of special applicability to this field of usefulness. The novelty of the lamp and its light has led to their extensive use as advertising attractions, but practical usefulness for purposes of general illumination is now said to be bringing the lamp into a wider field of application.

Concrete-Steel Lintels.—The Trussed Concrete Steel Company, Union Trust Building, Detroit, Mich., makers of the Kahn steel trussed concrete lintels for use in all types of building construction, have issued a 23-page, 7 x 5 inch pamphlet, describing, with illustrations, the construction and application of this device. The lintel consists essentially of a steel plate base, to which are riveted the lower extremities of a system of truss bars, which are imbedded in concrete to form the body of the lintel. For use in a brick structure the width of the base plate is made to suit the full thickness of the wall, while the thickness of the concrete body with its imbedded truss bars is less than this amount by at least one brick, thus providing for a continuous brick face to the wall, hiding the lintel in the rear. Tests of the strength of various forms of the Kahn lintel are reported, with illustrations of the methods used in making the tests. Various systems of trussing are made to suit different conditions of service and extended discussion of each is presented.

Boiler Tube Cleaners.—A 12-page, $3\frac{1}{2}$ x $6\frac{1}{4}$ inch pamphlet sent out by the General Specialty Company, 101-107 Seneca street, Buffalo, N. Y., to set forth the merits of the "Torpedo" and "Demon" tube cleaners made by them. The former device is for fire tubular boilers and is designed to be passed through the tubes and to effect removal of the exterior scale by a very rapid succession of light taps upon the interior, struck by a system of small hammers in the head of the tool. The Demon cleaner is made for use in water tube boilers, where it acts directly upon the scale, removing it by a system of cutters rotated by water power.

McClernan & Orr, mill representatives, Monadnock Block, Chicago, have issued a dainty 20-page price-list, printed on fine paper with red ruled borders. The lines described include shafting, shafting machinery, boiler tubes, mechanical tubing, plate steel, rivets, hoops, bands, seamless steel tanks and rims, sheet metal stampings and electric weldings. Valuable tables pertaining to these lines are included in the book.

The Macomber & Whyte Rope Company of Chicago are distributing to the trade a little pamphlet bearing the title, "A Simple Digest," and intended as a reminder of the existence of the firm and of their ability to supply wire ropes of various grades and sizes for the different classes of service commonly met in practice.

MANUFACTURING.

Iron and Steel.

Suffern, Hunt & Co., Decatur, Ill., are in the market for chain, wire cable or rope car puller, wire cable preferred.

The W. J. Patterson Construction Company, Denver, Col., have received the contract for the construction of the new plant of the Denver Steel Casting Company. There will be a foundry building, 130 x 250 feet; power house, 45 x 150 feet; pattern shop, office building and other small buildings. The plant will be located on a 30-acre site at the intersection of the Colorado & Southern and Denver & Rio Grande railroads, and will have an annual capacity of 12,000 tons. Construction work is expected to be completed in about five months. When in full operation the works will give employment to 300 hands. The total outlay will approximate \$250,000.

The Juniata Steel & Iron Company, Greencastle, Ind., have secured backing of some wealthy capitalists and will open their tin plate mills about January 1.

The Falls Hollow Staybolt Company, Cuyahoga Falls, Ohio, have doubled the capacity of their plant by the recent erection of an addition, 50 x 200 feet. They are now equipped to make prompt deliveries on any quantity of their refined charcoal hollow and solid staybolt iron for railway, locomotive and marine work.

Keystone Furnace, at Easton, Pa., was blown out October 12.

Hecla Furnace, Milledburg, Pa., was blown in November 3.

Belfont Furnace, Ironton, Ohio, was blown out for repairs October 14.

Princess Furnace, at Glen Wilton, Va., blew in October 24.

White Rock Furnace, Smythe County, Va., was banked October 20, for lack of water.

No. 3 furnace of the E. & G. Brooke Iron Company, Birdsboro, Pa., was blown out November 1.

A petition in bankruptcy has been filed against the old Chattanooga Furnace Company, Chattanooga, Tenn.

The Washburn Wire Company of Providence, R. I., have acquired the business and plant of the John Wales Wire Company of Auburn, R. I. The Wales Company have a rod mill, wire mill, nail mill and galvanizing plant, and employ about 100 men. The Washburn Company will absorb the Wales corporation. George R. Wales, president of the Wales Company, will continue to have an interest in the business.

Ella Furnace of Pickands, Mather & Co., at West Middlesex, Pa., has gone out of blast.

The Pittsburgh works of the American Tin Plate Company, at New Kensington, Pa., have shut down for an indefinite period. The plant contains seven sheet mills and pair furnaces, four annealing furnaces, six hot and seven cold mills, and has an annual capacity of 14,000 gross tons of black plate and soft stamping sheets running triple turn, and 5000 boxes weekly of tin andterne plates, running double turn.

The Bessemer plant of the Republic Iron & Steel Company, at Youngstown, Ohio, has been closed down for lack of orders. During the shut down slight repairs will be made and the plant put in first-class condition.

Stacks Nos. 1 and 3 of the Carnegie Steel Company, at Youngstown, Ohio, have been banked down, and all three stacks of this company at Youngstown are now idle, No. 2 having been banked some time since. Thomas Furnace of the Carnegie Steel Company, at Niles, Ohio, has been idle for some time.

The five foundries connected with the Edgar Thomson works of the Carnegie Steel Company, at Bessemer, Pa., have started up after a short shut down for repairs and other causes.

At the recent annual meeting of the Ashland Iron & Mining Company, Ashland, Ky., the following officers were elected: President, Robert Peebles; first vice-president, Frank Coles; second vice-president, K. L. Butler; secretary-treasurer, Frank B. Moore; auditor, A. N. Richardson.

General Machinery.

Additional machinery is to be installed in the new machine shop which Herpel Brothers, Reynoldsville, Pa., have completed, and which they are about ready to occupy. The building is 40 x 80 feet, of brick, two stories high, and will considerably increase their facilities for general machine and foundry work. The firm also deal in engines, boilers, mill supplies and plumbing goods.

The Electric Construction & Machinery Company, Rock Island, Ill., have secured the contract for the electrical work to be done at the new shops of the Rock Island road. The contract price is \$32,000 and calls for the installation of 146 arc lamps, 3500 incandescent lamps and 121 motors. The machinery for these shops was furnished by the General Electric and Crocker-Wheeler companies.

The Weller Mfg. Company, manufacturers of elevating and transmission machinery, Chicago, have let contracts for a factory addition to their plant, to cost \$8000.

The works of the Aetna Foundry & Machine Company, Springfield, Ill., have been closed down for two weeks, during which time the plant will be given a general overhauling and some important improvements made, including the installation of electric cranes.

The Marinette Iron Works, Marinette, Wis., who have recently transferred their gas engine plant to Chicago Heights, Ill., have secured a frontage of 650 feet on Seventeenth street and 530 feet on Wentworth avenue. The plant which is to occupy this property comprises two buildings, already completed, and two additional buildings which have not yet been erected; a machine shop, 80 x 350 feet, and a blacksmith shop, 50 x 80 feet.

It has not yet been decided just what new machines the Van Buren, Heck & Marvin Company, Findlay, Ohio, will require for their new plant, none of which have been purchased. Some of the machine tools which they are now operating in their present plant will be used, as a large number of new tools, such as lathes, shapers, drills, &c., were installed this season. The company will erect an electric plant. The new buildings, which are expected to be ready for occupancy by spring, comprise a machine shop, 150 x 250 feet; foundry, 60 x 80 feet, and several smaller buildings.

The Brunk Machine & Forge Company, recently organized at Lorain, Ohio, to manufacture machinery, have purchased a site in that place and will erect a factory, 40 x 100 feet, and one story high.

The Wellman-Seaver-Morgan Company, Cleveland, Ohio, who own and operate the Webster, Camp & Lane plant at Akron, have removed the engineering and drafting departments of that plant from Akron to Cleveland. The company are erecting a large and modern office building in Cleveland.

The Reserve Press Company, Cleveland, Ohio, are furnishing a number of multiple drilling machines to the Adler Stove Company of Pittsburgh. They are also furnishing a second lot of heavy presses to the Foyer Mfg. Company of Painesville, Ohio, who are just completing their factory for the manufacture of pressed metal toys.

The Cleveland Planer Company, recently organized to manufacture metal planers, have completed a brick factory building at the corner of Superior and Danforth streets, Cleveland, Ohio.

The E. J. Flather Mfg. Company of Nashua, N. H., are about to remove their machine shop to a building on Spring street in that city. The company have been doing business in one of the buildings owned by Joseph Flather. The new shop will provide room for growth and is directly upon the railroad. It is not the company's intention to increase their equipment at this time.

Flather & Co., Incorporated, of Nashua, N. H., are about to deliver two 14-inch lathes containing special features to the Massachusetts Institute of Technology at Boston.

The Hartfelder-Garbutt Company, Savannah, Ga., began business about the middle of March this year, having incorporated under the State laws of Georgia in February. They handle mill and railroad supplies, engines, boilers and general machinery. The president is E. F. Hartfelder; vice-president, R. M. Garbutt, and secretary and treasurer, G. A. Garbutt.

The Erie Railway Company's machine and repair shops, at Dunmore, Pa., have been shut down for an indefinite period. No cause for the suspension has been given.

Power Plant Equipment.

The Oshkosh Grass Matting Company, Oshkosh, Wis., are about to erect a new plant and expect to be in the market for engine, boilers, shafting, &c., about January 1.

The Pilsen Brewing Company, Chicago, will build a new brewery, to cost about \$150,000, which will require dynamo, motor, engine, boilers, &c.

Gade & Hardenbrook, Iowa Falls, Iowa, have added a blacksmith department to their plant for the purpose of manufacturing air cooling gasoline engines.

Plans are being prepared for a new power plant for the Indiana State University. Vonegut & Bohn, Indianapolis, are the architects.

Proposals for a 6,000,000-gallon high duty crank and fly wheel pumping engine, with auxiliaries, will be received by the Water Works Department, Jackson, Tenn., until November 24.

The strike of boiler makers at the Hellman Boiler Works, in Allentown, Pa., has been declared off, and the men have returned to work.

The Bair & Gazzam Mfg. Company of Pittsburgh are in the market for two 50 horse-power gas engines, dynamos and other equipment for an electric power plant.

The Treasury Department, Washington, D. C., will receive bids until November 17 for a low pressure steam heating plant for the United States Post Office at Lockport, N. Y.

The Wagner-Palmros Mfg. Company, Fairmont, W. Va., have opened an office in the House Building, Pittsburgh, with Edward Schenck in charge, for the sale of coal and ash handling equipment for power plants, and complete mine equipments.

Mr. Schenck has received a contract for a cable car haul for the Powell Coal & Coke Company, Powell, W. Va., with offices in the Lewis Block, Pittsburgh.

The Cleveland & Sandusky Brewing Company, Cleveland, Ohio, will erect a large brewing plant at Lorain, and have been receiving proposals on an engine, boilers, ice machinery and other necessary equipment. The plant will cost about \$300,000.

The Marine Boiler Works Company, Toledo, Ohio, have secured a contract for four large boilers for a new passenger steamer, to be built by the Craig Shipbuilding Company of Toledo.

The Joseph Reid Gas Engine Company, Oil City, Pa., have erected a plant at Marietta, Ohio, for the manufacture of the Reid gas engine and other supplies for oil fields. The building is 48 x 160 feet, one-half being two stories high. The company are preparing to erect a foundry at Marietta.

The Cambria Steel Company are erecting the iron work for the General Electric Company's new combination machine shop and a power house at Lynn, Mass. The buildings are to be used for the manufacture of Curtis turbines.

The Gallon Brewing Company, Gallon, Ohio, have placed a contract with Bollinger & Riley of Cleveland for a 25-ton ice and refrigerating machine. New engine, boiler, tanks and other equipment will be installed in their brewery.

Bridges and Buildings.

The Newcastle Bridge Company, Indianapolis, Ind., have received the contract for the bridge at Kokomo, Ind., being built by the Union Traction Company. It is a plate girder bridge, having two spans 65 feet each, with 42-foot roadway, paved floor and sidewalks.

The Penn Bridge Company, Beaver Falls, Pa., have recently received some large contracts for bridge work. Among these is a contract for a 900-foot plate girder bridge, to be erected at Sterling, Ill., to cost about \$50,000. Another is for a viaduct near Washington, D. C., and a third for a bridge across the Ohio River, near Steubenville, the cost of which will be about \$150,000. The girders for the Sterling bridge will be 100 feet long, 10 feet deep, and weighing 18 tons each. Twenty such girders will be required. The Steubenville bridge will be similar to the structure across the Beaver River between Monaca and Rochester.

The bridge shop of the Eastern Steel Company, at Pottsville, Pa., have just completed a large order for the Cuban Government, to be used in Havana harbor.

Foundries.

The Lakeside Malleable Castings Company, formerly the Lakeside Malleable Iron Company, Racine, Wis., have begun operations and are now under the management of John C. Osborne of Milwaukee.

The Helmick-Foundry Machine Company, Fairmont, W. Va., manufacturers of mine cars, castings, &c., will rebuild their foundry and blacksmith shop, which were recently destroyed by fire. Everything will be done that can be done to expedite the rebuilding of the destroyed parts of the plant, and the company expect within a few weeks to be in better shape than ever to take care of their trade, as it is their intention to make some considerable improvements when rebuilding. They were fortunate enough to have the foundry work well in advance of the other work, which will enable them to keep the machine shop running full force; in fact, the morning after the fire that department was in operation.

A petition in bankruptcy has been filed against the Ramapo Car Wheel Company, Hillburn, N. Y.

The Latrobe Wheel & Mine Supply Company have purchased the old Moore and Reaper Works, in South Latrobe, Pa., and will remodel the plant, operating it as a foundry and machine shop.

The first casting in the new foundry of the Standard Engineering Company, at Ellwood City, Pa., has been made and the plant has been put in regular operation.

The Colonial Foundry & Machinery Company of South Norwalk, Conn., have taken a large contract for iron castings for the new rapid transit power station at New York; and a contract for all the iron work for the five-story building being built by James I. Raymond at Stamford, Conn.

The big brass foundry of the Pennsylvania Railroad Company at Altoona, Pa., employing 250 men, has closed on account of lack of orders. For ten years the brass foundry has been one of the busiest departments of the Pennsylvania system.

Fires.

The plant of the Johnson Forge Company, Wilmington, Del., was destroyed by fire October 29. The loss is thought to be nearly \$125,000.

The repair shops of the Pittsburgh & Western Railway, at Allegheny, Pa., were recently destroyed by fire. The loss is about \$50,000.

The main building of the W. C. Newton Company's chemical and fertilizer plant, at Riverside, near Wilmington, Del., was partly destroyed by fire October 29. The loss is \$50,000.

W. S. Woodward's flour and feed mill and H. Kaiser & Co.'s

wagon works, Philadelphia, Pa., were damaged by fire October 30. W. S. Woodward's loss on machinery is put at \$10,000. The entire loss is estimated at \$35,000.

Fire did \$2000 damage to the Oliver Sheet Iron Mills, at Easton, Pa., October 23.

Bridgeford & Co's stove foundry, at Louisville, Ky., was recently damaged \$10,000 by fire.

The plant of the Amsterdam Waste & Metal Company, Amsterdam, N. Y., was destroyed by fire November 1, entailing a loss of \$25,000.

Hardware.

The Comstock Sash Lock & Novelty Company have been organized at Ypsilanti, Mich., with a capitalization of \$20,000. The company have purchased the old electric light plant on Cross street and the Michigan Central tracks, and will equip the same for their business. They will manufacture various kinds of stamped metal goods, besides a sash lock. E. M. Comstock is president and treasurer and S. W. McKillup manager.

John Peck, Sterling Ill., will immediately begin the construction of a one-story building, 30 x 70 feet, for the making of gun stocks, knife handles, &c. Mr. Peck has recently secured some large contracts for gun stocks, including 50,000 for the United States Government, to be furnished to the Rock Island arsenal, and 30,000 for the Springfield arsenal.

The Lansing Wheelbarrow Company, Lansing, Mich., expect to build a factory at Parkin, Ark. The building will be 110 x 251 feet and will be utilized in the manufacturing of ladder rounds, wheelbarrows, spokes and hubs.

A new factory building is to be erected by the American Tag Company at State and Sixty-first streets, Chicago. The estimated cost of the structure is \$20,000.

George Eberhard, formerly with the Eberhard Mfg. Company, Cleveland, Ohio, is attempting to organize a company for the manufacture of carriage and harness hardware. Propositions have been submitted to the boards of trade of Gallon, Sandusky, Norwalk and other Ohio towns, with a view to inducing citizens to give a bonus and take stock in the company that propose to erect an enormous plant.

The Universal Hinge & Mfg. Company, Cleveland, Ohio, have been formed with \$20,000 capital stock by H. L. Schneider, F. A. Richardson, Wm. L. Ballard, H. M. O'Malley and Thomas H. Penty. They will manufacture hinges.

The Wabash Screen Door Company, Chicago, have just completed an addition to their plant at Memphis, Tenn., 80 x 300 feet, three stories high, which, in connection with their factory building at Memphis gives 250,000 square feet of floor space. The new structure, like the factory building, is of brick, modern mill construction, thoroughly equipped with automatic sprinklers, and has track connections with the Frisco, Choctaw, Illinois Central and Missouri Pacific systems. Machinery is now being built for the manufacture of washboards, and this line in connection with screen goods will require the employment of 300 to 350 men. The company's new plant, which has just been completed at Minneapolis, is now in full operation. This plant is of the same size and construction as the Memphis works and is utilized for the manufacture of screen goods and stove boards. The two plants have a capacity of 1,000,000 screen doors per annum.

The Dowden Mfg. Company, Prairie City, Iowa, manufacturers of potato diggers, sorters and cutters and other farm implements, have nearly completed a foundry, 42 x 62 feet. The company will use the machinery employed at the old plant.

Miscellaneous.

The George M. Garland Company have been incorporated at Desplaines, Ill., to manufacture iron and metal goods, the incorporators being George M. Garland, George H. Curtis, and Ning Eley.

The Insulated Fiber & Mfg. Company, who control the mineral wool product of the country, and who purchased the Crystal Chemical Company of Alexandria, Ind., are building large additions to their plant there and will add the manufacture of roofing paper to their other products. The additions come as a result of the burning of one of the company's plants at St. Louis some time ago. Much of the machinery to be used will come from the American Window Glass Company's plant in Anderson, which is being abandoned.

The Columbus & Hocking Coal & Iron Company's net receipts from coal sales, rent, &c., during September were \$18,108, an increase of \$2322 over September, 1902. The surplus was \$14,568, an increase of \$2108. September coal shipments were 35,435 tons, a decrease of 4867 tons.

The Union Switch & Signal Company of Pittsburgh have just received two large orders, which bring the total amount of their electro-pneumatic equipment under order to a larger total than has ever been the case before in the history of the concern. The company have closed a contract with the Interborough Rapid Transit Company for all of the interlocking of the new subway and elevated railroad in New York. Last May the company took the contract for the block signaling. Most of the interlocking will be Westinghouse electro-pneumatic, and it is estimated that there will be 242 levers. The company have

also taken a contract for interlocking the Long Island City yard of the Long Island Railroad, which will require about 125 electro-pneumatic levers. The electro-pneumatic interlocking now on the books of the company aggregate 867 levers, which is more of this class of work than was ever in hand at any one time before.

William B. Scaife & Sons Company of Pittsburgh, Pa., manufacturers of the Scaife and We-Fu-Go systems for softening and purifying water, have appointed C. A. Malau of the City of Mexico their sole representative in that republic. This company are now softening and purifying 350,000 gallons of water daily for steam making and other purposes, for which pure soft water is desirable. Mr. Malau is not only thoroughly acquainted with the engineering and industrial wants of Mexico, but has devoted considerable attention to the subject of water purification.

It will probably be some little time before the recently organized Independent Packing Company will be ready to take up the matter of equipment for their proposed new plant. We are informed that the purchases of machinery will probably be made by the Executive Committee, who will have charge of erecting the first plant. At a recent meeting of the directors it was decided to postpone the election of a president until after January 12. The following officers were elected: L. F. Wilson of Texas, vice-president; F. W. Flato, Jr., Kansas City, Mo., treasurer, and C. F. Martin, Denver, Col., secretary. The directors are: M. K. Parsons, Utah; S. L. Williams, Indian Territory; R. R. Selway, Wyoming; Jno. W. Springer and Frank Benton, Colorado; J. T. Brown, Montana; F. W. Flato, Jr., Missouri; Paul Russell, Kansas; Noah Newbanks, South Dakota; L. F. Wilson, W. E. Halsell, R. H. Harris, Texas; A. W. Watson, Nebraska; H. A. Jastro, California; E. S. Gomey, Arizona; Jesse M. Smith, Utah; J. H. Gwinn, Oregon, and C. F. Martin, Colorado. All communications should be addressed to the secretary, C. F. Martin, Denver, Col.

The Alonzo Curtis Brick Company, Grantpark, Ill., are having plans made for a one-story brick machinery building, 48 x 92 feet. The work of construction will not begin until next spring.

D. H. Burnham & Co., Chicago, have awarded contracts to the following firms, among others, for the big new Railway Exchange Building, Chicago: Building hardware, P. & F. Corbin; ornamental iron work, Chicago Ornamental Iron Works Company; plumbing, M. J. Corboy; roofing and sheet metal work, J. C. McFarland & Co. The building will be completed and ready for occupancy on or before May 1.

The Crowe Metal Mfg. Company succeed the Bogue & Crowe Mfg. Company, at 77 West Jackson street, Chicago, in the manufacture of pressed machinery name plates.

Plans are being prepared by James B. Dibelka, architect, Chicago, for a plant at South Chicago, including a foundry, 90 x 200 feet, and building, 100 x 225 feet, to contain a machine shop, pattern shop and boiler house. Steel is to be used in construction, and the total cost of the plant, including equipment, is placed at \$90,000. The work is to be begun this fall, and it is expected that the plant will be completed by February of next year. The name of the owner is not divulged.

The Illinois Central Electric Railway Company of Canton, Ill., have been incorporated under the laws of Illinois for the purpose of constructing and operating an electric railway from Canton to Peoria. The present capitalization is \$300,000, which will be increased as soon as this stock is disposed of. The officers of the company are: President, U. G. Orendorff; first vice-president, W. O. Dean; second vice-president, R. F. Henkle; third vice-president, James A. Lawrence; secretary, W. D. Plattenburg; treasurer, E. A. Heald, general manager, Joseph David.

The Plunger Elevator Company of Worcester have the contract for the elevators for the large addition to the John Hancock Building at Boston.

The Walworth Mfg. Company of Boston are building a new brass foundry, which will be 54 x 260 feet and six stories high.

The E. M. Dart Mfg. Company of Providence, R. I., manufacturers of union couplings, announce that they produced 250,000 couplings during their business year, ending September 30.

The Toquet Launch & Motor Company, Saugatuck, Conn., have incorporated for the manufacture of automobiles. It is not yet decided whether a plant will be erected. The officers are: George N. McKibbin, president; B. Louis Toquet, secretary, and K. W. Mansfield, treasurer.

The Welsh-Loftus Uranium & Rare Metals Company, Buffalo, N. Y., have purchased a site in South Buffalo having a frontage on the Buffalo, Rochester & Pittsburgh Railway, and will build a small plant and laboratory for the treatment of uranium ores, with a view to the commercial production of radium in various combinations, and of other rare metals. The uranium ores will be brought from Utah, where the company own valuable deposits.

According to dispatches from Hartford, Conn., the Berlin Iron Bridge Company, now a part of the United States Steel Corporation, are to dissolve as a corporation and distribute the assets among the stockholders.

The Iron and Metal Trades.

A number of the Southern producers have again given way, so that transactions on the basis of \$9.50 for No. 2 Foundry, Birmingham, have been made on a fairly liberal scale. Our Cincinnati correspondent reports the sale, for export, of a lot of 15,000 tons of Southern Pig on the basis of \$9.50 for No. 2 Foundry and \$8.50 for Gray Forge. From Birmingham we hear of two small sales, also destined to Great Britain. The demand from the Mediterranean is said to be very light.

In Cincinnati one large smelting interest earlier in the week took 15,000 tons on the basis of \$9.75 for No. 2.

The pace set by the Southern producers must have widespread effects, since there can be no hope now for months to come for many furnaces there and in other parts of the country to continue in operation. Natural causes are bringing about what agreements have failed to do either in the South or in the East. The foundry industry is little affected by what is being done in the Central West.

Prices in the Birmingham district have now reached a point when the export business seems nearly possible without any special sacrifices, and that in itself is a warning to buyers not to press too long. It is thoroughly well understood that the yards of the foundries are exceptionally bare, and during the last week there have been many signs that some melters are realizing this. The talk of the excessive cost of production has little influence upon buyers, yet the suddenness of the decline will cause many producers to pause who might otherwise have gone on hoping against hope.

There are a good many rumors relating to export sales of finished Iron and Steel. We cannot hear that much has been done, nor are the prices obtainable very tempting. Some minor sales of Steel Rails have been made, among them a 4000-ton lot to Japan, and about 5000 tons to Corea. But a South American order was lost. The Rail makers are to meet to-morrow.

Reports relating to Finished Material in the domestic markets are not favorable. Cut Nails have been reduced 25c. per keg in price. Concessions on Plates and Bars are being made through the aid of crowding tonnage into distant markets. Lower prices have been made on Sheets.

The Steel pool is still in session as we go to press. There is some curiosity in the trade relative to the methods to be used to make "official" prices effective now which have been ignored for some time past.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type,
Declines in Italics.

At date, one week, one month and one year previous.

	Nov. 4, 1903.	Oct. 28, 1903.	Oct. 7, 1903.	Nov. 5, 1902.
PIG IRON:				
Foundry Pig No. 2, Standard, Philadelphia.....	\$15.00	\$15.25	\$15.25	\$22.50
Foundry Pig No. 2, Southern, Cincinnati.....	12.25	12.75	13.75	22.25
Foundry Pig No. 2, Local, Chicago.....	15.50	15.50	15.00	23.00
Bessemer Pig, Pittsburgh.....	15.70	15.85	16.10	21.50
Gray Forge, Pittsburgh.....	13.50	14.00	14.25	21.50
Lake Superior Charcoal, Chicago.....	17.50	17.50	19.00	26.00

BILLETS, RAILS, &c.

Steel Billets, Pittsburgh.....	27.00	27.00	27.00	29.00
Steel Billets, Philadelphia.....	26.00	27.00	26.00	27.00
Steel Billets, Chicago.....	28.00	27.00	28.00	29.00
Wire Rods, Pittsburgh.....	33.50	34.00	34.00	35.00
Steel Rails, Heavy, Eastern Mill.....	28.00	28.00	28.00	28.00

OLD MATERIAL:

O. Steel Rails, Chicago.....	12.50	12.50	14.00	19.00
O. Steel Rails, Philadelphia.....	12.50	13.50	14.25	21.50
O. Iron Rails, Chicago.....	17.00	17.00	17.00	25.00
O. Iron Rails, Philadelphia.....	17.00	17.00	17.50	24.50
O. Car Wheels, Chicago.....	17.00	18.00	18.00	24.00
O. Car Wheels, Philadelphia.....	15.00	16.00	16.00	21.00
Heavy Steel Scrap, Pittsburgh.....	14.50	14.50	16.00	21.00
Heavy Steel Scrap, Chicago.....	12.00	12.00	13.00	18.50

FINISHED IRON AND STEEL:

Refined Iron Bars, Philadelphia.....	1.45	1.50	1.50	1.85
Common Iron Bars, Chicago.....	1.45	1.45	1.50	1.75
Common Iron Bars, Pittsburgh.....	1.40	1.45	1.50	1.80
Steel Bars, Tidewater.....	1.70	1.70	1.73½	1.72
Steel Bars, Pittsburgh.....	1.60	1.60	1.60	1.60
Tank Plates, Tidewater.....	1.78	1.78	1.78	2.10
Tank Plates, Pittsburgh.....	1.60	1.60	1.60	1.85
Beams, Tidewater.....	1.73½	1.73½	1.73½	2.00
Beams, Pittsburgh.....	1.60	1.60	1.60	2.10
Angles, Tidewater.....	1.73½	1.73½	1.73½	2.00
Angles, Pittsburgh.....	1.60	1.60	1.60	2.00
Skelp, Grooved Iron, Pittsburgh.....	1.40	1.45	1.50	1.95
Skelp, Sheared Iron, Pittsburgh.....	1.50	1.60	1.65	2.05
Sheets, No. 27, Pittsburgh.....	2.50	2.50	2.55	2.65
Barb Wire, f.o.b. Pittsburgh.....	2.60	2.60	2.60	2.45
Wire Nails, f.o.b. Pittsburgh.....	2.00	2.00	2.50	1.85
Cut Nails, f.o.b. Pittsburgh.....	1.90	2.15	2.15	2.05

METALS:

Copper, New York.....	14.00	14.00	13.25	11.62½
Spelter, St. Louis.....	5.40	5.55	5.60	5.15
Lead, New York.....	4.40	4.40	4.40	4.10
Lead, St. Louis.....	4.30	4.27½	4.30	4.00
Tin, New York.....	25.75	25.75	26.00	26.12½
Antimony, Hallett, New York.....	6.25	6.25	6.25	7.75
Nickel, New York.....	40.00	40.00	40.00	40.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York.....	3.99	3.99	3.99	3.79

Chicago.

FISHER BUILDING, November 4, 1903.—(By Telegraph.)

The only marked changes in prices since last week are the reduction on Pig Iron to a \$9.50 basis, Birmingham, for No. 2, and the deep cut in Structurals from Chicago stores. In Pig Iron circles most of the accredited furnace agencies in Chicago are compelled to drop out of competition at prices below \$10, Birmingham, basis, but some large producers are freely offering their surplus stocks for immediate shipment at \$9.50, selling in single car lots at that price when necessary. The cut in Structurals from Chicago store was unexpected, as the largest jobbers here had succeeded in reducing their stocks to a point where they felt more comfortable than they did some months ago. It is said that it was precipitated by one jobber, who is also an exclusive mill representative, and that it was promptly met by competing interests. Old Materials have suffered another, though not unexpected, drop of about 50c. per ton. Business continues on the same hand to mouth basis as before, and the reduction in prices does not seem to stimulate large buying.

Pig Iron.—The price of Southern Pig Iron may also be said to be the price that the buyer is willing to pay for it, with the present minimum at \$9.50, Birmingham, for No. 2. It is true that the great majority of the purchasers reported in this market state emphatically that they will not sell Iron below the \$10 basis for the reason that they cannot produce it below that figure without taking a loss. The cost of producing Pig Iron is practically the aggregate of the cost of labor in mining Coal, Limestone and Ore, labor in transporting these products to the furnaces, labor in carrying on the furnace operations leading up to the

loading of the Pig Iron on the cars. Producers say that this labor cost under the stress of the feverish conditions of last winter has been practically doubled; that the laborers, both skilled and unskilled, used their power at the time when they were indispensable to create fictitious values for their service, and that unless labor can be reduced to the old figures Pig Iron can never be reduced to the price at which it was sold before the recent boom. Some factors are not slow to predict a \$9 basis, which would mean \$12.50, Chicago; others say that long before this point is reached so many furnaces will go out of blast that the consequent curtailment of production will lead to the same pyrotechnic advance in prices that was experienced last fall. Consumers' yards are empty, and with the first indication of an advance in prices or of a shortage in supply, buyers, following some recognized bellwether, are likely to rush like a flock of sheep to supply their necessities, forcing the market again above its legitimate level just as they have done before. The strong furnaces, those owning their own sources of raw material and fuel, will profit by this advance and secure the bulk of the trade before the weaker furnaces which have been forced to blow out shall be able to resume operations. Northern Irons have suffered but little as a consequence of this life and death struggle in the Southern field, as the leading Northern furnaces prefer to rest on their oars waiting for the storm to blow over. A local mill placed an order for 1000 tons of Northern Iron on the basis of about \$15, Chicago, for No. 2, and other buyers are supplying their wants for the next 30 to 60 days at higher or lower figures, according to the quantities which they require, the majority of the orders being for single car lots in both Northern and Southern grades. The following quotations represent the lowest and highest extreme prices quoted in this market for prompt delivery at Chicago in carload lots. Furnaces are asking for contracts extending into 1904 50c. to \$1 per ton higher than the minimum prices named:

Lake Superior Charcoal.....	\$17.50 to \$18.50
Northern Coke Foundry, No. 1.....	16.00 to 16.50
Northern Coke Foundry, No. 2.....	15.50 to 16.00
Northern Coke Foundry, No. 3.....	15.00 to 15.50
Northern Scotch, No. 1.....	16.00 to 16.50
Ohio Strong Softeners, No. 1.....	17.00 to 17.50
Ohio Strong Softeners, No. 2.....	16.50 to 17.00
Southern Silvery, according to Silicon.....	15.35 to 16.35
Southern Coke, No. 1.....	13.85 to 14.35
Southern Coke, No. 2.....	13.35 to 13.85
Southern Coke, No. 3.....	13.10 to 13.60
Southern Coke, No. 4.....	12.85 to 13.10
Southern Coke, No. 1 Soft.....	13.85 to 14.35
Southern Coke, No. 2 Soft.....	13.35 to 13.85
Foundry Forge.....	12.60 to 13.10
Southern Gray Forge.....	12.35 to 12.85
Southern Mottled.....	12.35 to 12.85
Southern Charcoal Softeners, according to Silicon.....	17.85 to 18.85
Alabama and Georgia Car Wheel.....	21.85 to 22.85
Malleable Bessemer.....	15.50 to 16.00
Standard Bessemer.....	16.25 to 17.00
Jackson County and Kentucky Silvery, 6 to 10 per cent. Silicon.....	18.80 to 19.80
Basic Southern.....	13.85 to 14.35

Bars.—There is no change in the price of Steel Bars, which remain 1.76½c., base, half extras, Chicago, in carload lots, for Bessemer, and 10c. higher for Open Hearth, with the usual extras for less than 1 ton of a size and 5c. to 10c. per 100 lbs. extra for less than car lots, according to character of specifications. Iron Bars are steady at 1.45c. to 1.50c., with one factor willing to shade the 1.45c. price where good extras are present. We quote carload lots or greater from mill, f.o.b. Chicago: Steel Bars, 1.76½c., base, half extras; Iron Bars, 1.40c. to 1.50c., base, half extras; Angles, less than 3 x 3 inches, 1.86½c., base; Hoops, in 250-ton lots and greater, 2.06½c.; smaller lots, 2.16½c., full extras. Steel Bars are selling from store at 1.90c. to 2c., half extras, and Iron Bars at 1.80c. to 2c., full extras; Angles, less than 3 x 2 inches, from store, 2c., base, full extras.

Structural Material.—The quiescence of the once militant labor element concerned in the erection of buildings has lent to a healthier tone in the market for materials, and if it continues will result in the erection of a large number of buildings that would otherwise be postponed indefinitely. Inquiries are coming in at a rate that warrants the belief that the winter will not be inactive. Prices remain unchanged. We quote for mill shipment, Chicago: Beams, Channels and Zees, 15 inches and under, 1.75c. to 1.90c.; 18 inches and over, 1.85c. to 2c.; Angles, 1.75c. to 1.90c. rates; Tees, 1.80c. to 1.90c.; Universal Plates, 2c. to 2.25c. From store a horizontal cut of 20c. per 100 lbs. has been made, Angles, Beams and Channels being quoted at 1.90c. to 2c., instead of 2.10c. to 2.20c., this price including cutting to lengths 5 feet and over, with the regular extras prevailing for shorter lengths; Tees, 1.95c. to 2.05c.

Plates.—No change can be noted in the price of Plates, either from mill or store, and the business continues to be one of the quietest on the list. We quote official prices for shipment from mill as follows: Tank Steel, ¼ inch and heavier, 1.75c. to 2c.; Flange, 1.85c. to 2.15c.; Marine, 1.95c. to 2.10c.; Universal Mill Plates, 1.75c. to 2c. We quote from store as follows: Steel, ¼ inch and heavier, 2c.

to 2.15c.; Tank Steel, 3-16 inch, 2.10c. to 2.25c.; No. 8, 2.15c. to 2.30c.; No. 10, 2.30c. to 2.40c.; Flange Steel, 2.25c. to 2.40c., all f.o.b. warehouse, Chicago.

Sheets.—There is a feeling in this market that the leading producer is naming some extremely low prices to favored buyers in the shape of rebates and discounts. The failure of low priced quotations on the part of independent mills to secure business can be accounted for in no other way. Though no confirmation is at hand, it is rumored that Sheets are sold for Western delivery on the basis of 2.50c., Pittsburgh, for No. 28 in carload lots. This would be 2.66½c., Chicago, though 1.76½c., Chicago, seems to be the present minimum price. We quote for shipment from mill in carload lots the following prices, at Chicago: No. 10, 1.91½c. to 2.01½c.; No. 12, 2.01½c. to 2.11½c.; No. 14, 2.11½c. to 2.21½c.; No. 16, 2.21½c. to 2.31½c.; Nos. 18 and 20, 2.36½c. to 2.46½c.; Nos. 22 and 24, 2.46½c. to 2.56½c.; No. 26, 2.56½c. to 2.66½c.; No. 27, 2.66½c. to 2.76½c.; No. 28, 2.76½c. to 2.86½c. Store prices are nominally unchanged, although buyers in the market for considerable quantities have no difficulty in securing quotations 5c. to 10c. lower than the following prices: No. 10, 2.30c. to 2.40c.; No. 12, 2.40c. to 2.50c.; No. 14, 2.50c. to 2.60c.; No. 16, 2.60c. to 2.70c.; Nos. 18 to 20, 2.75c. to 2.85c.; Nos. 22 and 24, 2.85c. to 2.95c.; No. 26, 2.95c. to 3.05c.; No. 27, 3.05c. to 3.15c.; No. 28, 3.15c. to 3.25c. Galvanized Sheets in large quantities are also likely to be quoted lower than the following official store prices: 75, 10 and 5, Pittsburgh, with 5c. freight allowance, on desirable specifications, and 75, 10 and 2½ on mixed specifications. From store Galvanized sells at 75 and 2½ to 75 and 5 discount.

Cast Iron Pipe.—Prices are unchanged, and business is only fairly active for this time of year. Small orders for quick delivery are coming in satisfactorily at the following prices, f.o.b. cars, Chicago: 4-inch, \$29.50; 6-inch and larger, \$28.50, in carload lots, for Water, and \$1 per ton higher for Gas Pipe. These prices, however, are being shaded in quoting on large contracts.

Billets.—The Billet pool is a dead letter as far as the Western market is concerned, and prices are made to measure without regard to the schedule laid down by the pool. There is a general disposition to waive the \$3 per ton extra for Forging Billets and to offer Open Hearth Forging Billets at \$28 to \$29 per ton on large inquiries and Bessemer Billets \$1 per ton less. There are so few Re-rolling Billets used in this market that it is difficult to state what the Chicago market price would be on that grade of Billets if they were in demand. Single car lots would range \$28 to \$29 for Bessemer and \$29 to \$30 for Open Hearth Forging Billets.

Merchant Pipe.—No tangible results can be noted in the trade from the meeting of independent Pipe makers at Pittsburgh last week. If it was decided, as rumored, to make concessions to the trade on the smaller diameters, these concessions have not developed, and discounts remain unchanged, quotations in car lots, random lengths, mill shipment, Chicago delivery, being as follows:

	Steel Pipe.		Guaranteed Wrought Iron.	
	Black.	Galvd.	Black.	Galvd.
Per cent. Per cent.				
¼ to ¾ inch.....	66.35	56.35	63.35	53.35
¾ inch.....	68.35	58.35	65.35	55.35
¾ to 1 inch.....	73.35	63.35	70.35	60.35
1 to 12 inches.....	67.35	57.35	64.35	54.35
Less than carloads, 12½ per cent. advance.				

Boiler Tubes.—This has been a quiet week in Boiler Tubes, particularly for mill shipment. Trade has been fairly active from store. The leading producer quotes the following discounts, which have now been concurred in by the leading jobbers, the discounts heretofore published having been withdrawn:

	Steel.	Iron.
1 to 1½ inches.....	40.85	37.35
1½ to 2½ inches.....	53.85	36.35
2½ to 5 inches.....	59.35	46.35
6 inches and larger.....	53.85	36.35

Quotations on Boiler Tubes from store in car lots or less are as follows:

	Steel.	Iron.	Seamless steel.
1 to 1½ inches.....	40	35	37½
1½ to 2½ inches.....	50	32½	35
2½ to 5 inches.....	57½	42½	45
6 inches and larger.....	50	32½	..

Merchant Steel.—Implement manufacturers are evidently resuming operations, as judged by their active specifications on contracts and by occasional new contracts. The character of their buying indicates, however, that they are only supplying their current needs. Prices remain unchanged. The following are the official prices, f.o.b. cars, Chicago: Smooth Finished Machinery Steel, 2.01½c. to 2.11½c.; Smooth Finished Tire, 1.96½c. to 2.11½c.; Open Hearth Spring Steel, 2.50c. to 2.55c.; Toe Calk, 2.31½c. to 2.46½c.; Sleigh Shoe, 1.86½c. to 1.96½c.; Cutter Shoe, 2.41½c. to 2.61½c. Ordinary grades of Crucible Tool Steel are quoted at 6½c. to 8c. for mill shipment; Specials, 12c. upward. Cold Rolled Shafting in carload lots sells at 47 and in less than carload lots at 42 discount from list.

Rails and Track Supplies.—Business has been quiet in this line for the past week and devoid of contracts for large tonnages. Though official prices are still quoted as before, there is a feeling among buyers that these prices cannot long be upheld in the face of competition of independent mills, if indeed they are being upheld at the present moment. We quote as follows for shipment from mill in car lots: Standard Rails, \$28 to \$30; Standard, second quality, \$27 to \$29; Light Rails, 25 to 12 lbs., \$32 to \$35; Angle Bars, 1.00c. to 2c.; Spikes, 2c. to 2.10c.; Track Bolts, 3½ x 3¼ inches, 2.75c. to 2.85c., with 15c. advance for Hexagon Nuts.

Old Material.—The expected drop in Old Materials has taken place and the fact that thousands of tons of this material are heaped up waiting for buyers makes it safe to prophesy that there will be still further concessions on some of the lines. The following are the approximate quotations per gross ton, f.o.b. cars, Chicago:

Old Iron Rails.....	\$17.00 to \$17.50
Old Steel Rails, mixed lengths.....	12.50 to 13.00
Old Steel Rails, long lengths.....	14.00 to 14.50
Heavy Relaying Rails.....	23.00 to 23.50
Old Car Wheels.....	17.00 to 17.50
Heavy Melting Steel Scrap.....	12.00 to 12.50
Mixed Steel.....	11.00 to 11.50

The following quotations are per net ton:

Iron Fish Plates.....	\$13.00 to \$13.50
Iron Car Axles.....	17.00 to 17.50
Steel Car Axles.....	14.00 to 15.00
No. 1 Railroad Wrought.....	13.00 to 13.50
No. 2 Railroad Wrought.....	11.50 to 12.00
Shafting.....	14.00 to 14.50
No. 1 Dealers' Forge.....	11.00 to 11.50
No. 1 Bushing and Wrought Pipe.....	9.50 to 10.00
Iron Axle Turnings.....	10.00 to 10.25
Soft Steel Axle Turnings.....	9.00 to 9.50
Machine Shop Turnings.....	8.00 to 8.50
Cast Borings.....	4.50 to 5.00
Mixed Borings, &c.....	4.50 to 5.25
No. 1 Boilers, cut.....	10.00 to 11.00
Heavy Cast Scrap.....	12.00 to 12.50
Stove Plate and Light Cast Scrap.....	9.50 to 10.00
Railroad Malleable.....	11.00 to 11.50
Agricultural Malleable.....	10.00 to 11.00

Coke.—Buyers of Coke are not inclined to anticipate their wants, but buy in single car lots from track, thus availing themselves of the latest quotation, which is likely to be the lowest. We quote 72-hour Connellsville, \$5.40 to \$5.65; Connellsville Furnace, \$4.60 to \$4.75; West Virginia, 72-hour, \$5 to \$5.25; West Virginia Furnace, \$4.55 to \$4.75.

Metals.—Copper has remained steady, Casting Copper selling at 13½c. to 13¾c. and Lake at 14c., in carload lots, Chicago. Lead is unchanged, with a moderate demand at 4¾c. in 50-ton lots, 4.40c. in carload lots and 4½c. in less than carload lots. Spelter is slightly weaker, but without change of moment in prices, sales being made at 5.65c. to 5.75c. in carload lots and 6c. in smaller quantities. Old Metals have been quiet. Copper, Brass and Zinc have been reduced. Sales are made as follows: Heavy Cut Copper, 11½c.; Copper Bottoms, 10½c.; Red Brass, 10½c.; Lead, 4c., and Zinc, 4¾c., spot.

Philadelphia.

FORREST BUILDING, November 3, 1903.

There is little of interest that can be said in regard to the Iron and Steel trades, except that there are no indications of greater activity or better prices. The volume of business is smaller than it has been at any time within the past two or three years, and although a great many orders are entered the tonnage amounts to very little. The inference to be drawn from these conditions is that there is very little work on the books, but such as there is must be provided for by immediate purchases of the necessary material. Everything seems to be down to zero, but unfortunately there are no evidences of a rise in the business temperature. It may come at short notice or present conditions may continue indefinitely; there is nothing whatever to give any tangible evidence of improvement or the reverse. The Pig Iron interests have settled down to a decrease in production of from 30 to 40 per cent. at all points North and West, and this will continue during the present month and probably to the end of the year. This may be regarded as an indirect expression of the opinion of Pig Iron manufacturers as to consumption requirements during the period mentioned. This will test the market pretty thoroughly and enable them to judge what will have to be met during the first half of 1904, and to adjust matters accordingly. While the experiment is being made it is hardly worth while to anticipate results, but in the meanwhile there is certainly nothing very hopeful in the outlook. New orders are scarce and in small volume, and as far as can be seen there is hardly anything of importance likely to come on the market before spring, and that is too far in the distance to warrant any positive opinions, considering the unsettled conditions with which the trade are confronted. There has been some business done for export, but it is probably more as an experiment than as a fairly remunerative business proposition. It is claimed that

prices were "about" the \$10 figure, f.o.b. furnaces in Alabama; that the freight is \$1 by rail and \$1.44 by water, and port charges 56c.—say \$13. This would have to meet about 52 to 53 shillings, Manchester or Glasgow, equivalent to \$12.50 to \$13. The fact to be considered, however, is that English and Scotch Iron would be reduced to meet American competition, so that \$10, f.o.b. Alabama furnaces, would not cut much figure in future transactions, and it is by no means certain that 50c. to \$1 less would do it either. Similarly in regard to Plates. It is reported that sales for export have been made at 1.35c., f.o.b. Pittsburgh. Sales of that character have undoubtedly been made, but as the price of English or Scotch Plates is only £5 12s. 6d. it is hardly likely that they would pay more than £6, f.o.b. Pittsburgh, and, in addition to that, \$3 or \$4 per ton more for freight. An actual parity would be from 1.12c. to 1.15c., f.o.b., and if any business is done it cannot be at higher figures, unless through freights are less than \$3 per gross ton. Export business will no doubt be secured, but foreigners will not pay from \$3 to \$5 per ton premium for the privilege of using American products.

Pig Iron.—Hardly any two persons make the same report in regard to the market for Pig Iron, yet when the bottom facts are known there is not much difference after all. The difference in conditions is very clearly marked, however. Those whose brands are special favorites and must be more or less used in mixtures maintain very full prices, say \$15.50 to \$16, delivered for No. 2 X Foundry. There are others whose Irons are fairly well known, and they may quote \$15 to \$15.25, while Alabama Irons can be had at anywhere from \$13.75 to \$14.25. Here is difference enough to cover a multitude of sins and enable prices to be fixed at anything from \$14 to \$16, and even then have a little margin for extension. But in no case can any large transactions be noted. Pipe founders take good round lots once in a while when they get tempting offers, but the rule is to buy just as little as possible; 500 tons being regarded as an unusually large sale, most of the lots being 50 to 100 or 200 ton lots for immediate shipment. Furnaces are mostly in position to meet these requirements promptly, as they have fair sized stocks on hand, besides which the amount called for is not important, although the distribution covers a wide area. As regards the outlook, there is nothing in sight likely to change present conditions. There is no reason to expect much increase in the demand, and no reason to expect higher prices; whether they will work lower or not, remains to be seen. For the present for Philadelphia and nearby deliveries, prices are about as follows:

No. 1 X Foundry.....	\$16.00 to \$16.50
No. 2 X Foundry.....	15.00 to 15.75
No. 2 Plain.....	14.50 to 15.00
Southern No. 2, rail shipment.....	14.00 to 14.50
Southern No. 2, on dock.....	13.50 to 13.75
Standard Gray Forge.....	13.75 to 14.25
Ordinary Gray Forge.....	13.25 to 13.50
Basic.....	14.25 to 14.50

Steel.—Prices are easier, but more business is being done, and it looks now as though consumers are satisfied to place orders. Large lots have been taken at about \$26, delivered, and at from that to \$26.50 there is a fair demand.

Plates.—Business is very quiet, although small orders are fairly numerous, but heavy tonnages are scarce, so that it requires a great many orders to keep things going. Prospects cannot be regarded as satisfactory, although it is still hoped that present conditions can be maintained, although they are at the moment insufficient to give profitable employment to mills engaged in the Plate trade. The price of Plates up to 72 inches ordered by weight, such as 10 2-10 lbs. per square foot, can now be considered at the ¼-inch base price, without extras. Above 72-inch wide Plates unless ordered ¼ inch thick will be considered at the regular price of 3-16 inch thickness. Otherwise prices are unchanged as follows: Tank Steel, both Sheared and Universal, up to 100 inches, 1.75c. to 1.80c., in large lots; Flange, 1.85c. to 1.90c.; Commercial Fire Box, 1.95c. to 2c.; Locomotive Fire Box, 2.25c. to 2.30c.; small lots, 10c. to 15c. per 100 extra; 100 to 110 inches, 0.5c. extra; 110 to 115 inches, 0.10c. extra; 115 to 120 inches, 0.15c. extra; 120 to 125 inches, 0.25c. extra; 125 to 130 inches, 0.50c. extra; over 130 inches wide, 1c. extra; Plates under ¼ inch on edge, 0.10c. extra; under 3-16 inch on edge to No. 8, 0.15c. extra; No. 9, B. W. G., 0.25c. extra; all Sketched Plates, 0.1c. extra; all Circle Plates, 0.2c. extra.

Structural Material.—Conditions in the building trade are no better than they have been for months past, and with the approach of winter nothing better can be expected in the near future. Prices are supposed to be maintained, and no doubt are maintained as a rule, but the offer of a large tonnage would be a great inducement toward lower prices. In the absence of such business, however, we quote 1.73½c. to 1.85c. for Beams, Channels and Angles, according to specifications.

Bars.—Sales of Bar Iron are of moderate proportions, but the orders are small and may or may not be quickly repeated. There is, indeed, a good deal of uncertainty, and all that can be done is to take orders as they come and take

chances of renewals. Prices average about 1.50c., delivered, for good Refined Iron in carload lots and upward, but some want more money for first-class Iron; others accept about 1.45c., making the range 1.45c. to 1.55c. Steel Bars dull and unchanged at 1.73½c. to 1.80c.

Sheets.—Business is duller than it has been at any time during the season, but enough business comes in to keep the mills fairly employed. How long this will continue is uncertain, as in all lines business is of the day to day character. Prices depend a good deal on what is wanted, how much is wanted and when wanted.

Old Material.—The market is extremely dull and prices are still working on the down grade. Bids and offers for deliveries in buyers' yards are about as follows:

Old Steel Rails.....	\$12.50 to \$13.00
Heavy Steel Scrap.....	12.00 to 12.50
Low Phosphorus Scrap.....	20.00 to 21.00
Old Steel Axles.....	16.00 to 17.00
Old Iron Rails.....	17.00 to 17.50
Old Iron Axles.....	19.00 to 20.00
Old Car Wheels.....	15.00 to 16.00
Choice Scrap, R. R. No. 1 Wrought.....	16.00 to 16.50
Country Scrap.....	14.00 to 14.50
Machinery Scrap.....	13.00 to 14.00
No. 2 Light Scrap.....	11.50 to 12.00
No. 2 Light (Ordinary).....	9.50 to 10.50
Wrought Turnings.....	10.00 to 10.50
Wrought Turnings, Choice Heavy.....	10.75 to 11.25
Cast Borings.....	7.00 to 7.50
Stove Plate.....	10.50 to 11.00
Wrought Iron Pipe.....	12.00 to 12.50

Cleveland.

CLEVELAND, OHIO, November 3, 1903

Iron Ore.—On last Friday the United States Steel Corporation made a considerable reduction in the allotment of Ore which is to be brought down this year in their vessels. A small reduction had been made in July and August, none having been made in September. The vessel interests, becoming disturbed lest their supply of Ore should be also cut down, were assured that the Steel Corporation proposed to live up to their contracts. As far as the Steel Corporation are concerned, however, it will be but a short time until the only boats running on their Ore will be the contract tonnage. Other shippers manifest also a desire to limit the amount of material being brought down the lakes. This has removed all of the wild Ore from the lakes. The rates naturally would sag with so great a supply of carrying capacity pitted against such a small demand. The policy of the shippers has maintained them. It is desired to cause no antagonism among the vessel owners which will drive them to laying their boats to the docks. The policy of curtailing the shipment of Ore also grew in a measure out of the conditions existing in the lower lake region, where the furnaces are not in position to handle much more Ore than they have and have given stop shipping orders. The lake docks are also pretty well crowded. The market for lake tonnage in the Ore trade is therefore not very promising. The rates of carriage remain unchanged, on a basis of 80c. from the head of the lakes. Sales under such conditions are impossible, and any quotation would be purely nominal and hardly indicative. The close of the Iron Ore season on the lakes is beset with some difficulties. Two ports have had their effectiveness in the transfer of Ore from the boats to the railroads seriously crippled. Ten days ago a steamer trying to enter the harbor of Conneaut became fast upon a bar. Trying to work herself free without the aid of a tug the bottom was churned up, forming a ridge in the middle of the channel, which has since been increased in size by the action of the waves produced by fall storms. Conneaut, for the time being, is out of the business of transferring Ore. The development of a quicksand marsh on the lake front at Cleveland and the latter part of the week slid the Lake Shore Railway and the Pennsylvania Company's lines into the lake, making it impossible to run through trains over that part of the city. The accident will cripple the Pennsylvania docks and may prevent their use through the remainder of the year. These two ports, Cleveland and Conneaut, have been the principal points of Ore receipts on Lake Erie, and this disaster to them will affect the movement seriously through the remainder of the year. It may be that the lessening of the Ore shipment down the lakes is opportune.

Pig Iron.—The demand for Pig Iron during the past week has centered very largely in Southern, both for spot and future delivery, the demand being based upon the feeling that those prices are much lower than Northern prices are likely to go for some time. No. 2 Southern is being offered freely at \$10 to \$10.25, Birmingham, for immediate shipment, which is too far below the Northern Iron for competition by the Northern stacks. These have been holding to their prices, however, and have been getting a fair amount of business. The market has been steadily quoted at \$14.50 in the Valley for No. 2, with the report in circulation, unconfirmed as it is, that the material has been sold at \$14. The demand for Northern Iron has lessened somewhat during the past ten days, foundries reducing their melts and dismissing their molders. The market for Bessemer and Basic has been dull and listless, with talk of further

curtailment of production. There is a fair demand for Malleable Bessemer at \$15 to \$15.50 in the Valleys. The Coke supply has been a little easier. Some of the ovens which have been behind in their deliveries have been able to get a better car supply and consequently to catch up somewhat. Prices have held steady at \$3 for 72-hour Foundry Coke and \$2.75 for High Sulphur Cokes at the ovens.

Finished Iron and Steel.—Contention between the producer and the consumer over the stability of prices has brought about a state approaching stagnation in some trades, particularly Steel Bars, Plates and Shapes. In many instances the Agricultural Implement works are disposed to produce largely in hope of a good market next year, but have been holding off for a reduction in Steel Bars. Many are not filling current needs entirely and the business drags noticeably. The Steel producers, acting upon the belief that if a cut is made it will not stop at \$2 a ton, but go to \$5 a ton, have refused to make any concessions whatever other than guaranteeing the price to the consumer. There has been talk about doing away with all agreements as to prices and let the market become active at what prices the consumer is willing to pay. Bar Iron is being sold heavily in the interim. The complete absence of an agreement as to prices permits them to sag gradually, but not rapidly. It is known that 1.40c., at the mill, has been cut under, but to what extent does not appear. The generality of reports make the low market at 1.35c., although some consumers claim to have shaded that \$1 a ton. The market is about represented still by 1.40c., at the mill. The Sheet trade has seemed to ease off a little more, but has not yet reached the point where association prices are to be broken. The smaller mills are getting business by cutting under association lists from \$2 to \$3 per ton, with even greater concessions now being made by some of the mills in sore need of business. Prices are nominally 3.05c. for No. 27 Black Sheets out of stock, 2.20c. for No. 14 blue annealed in car lots at the mill, 2.75c. for No. 27 one pass cold rolled in car lots at the mill and 4c. for No. 27 Galvanized out of stock. Rail consumers are still talking about business to be placed when the price is reduced and inquiries for considerable amounts come in, with inquiries about a reduction to \$25 or \$26 a ton. The prospective purchaser being assured that association prices prevail, the inquiry is withdrawn. There has been a fair demand for Billets at the prices quoted by the independent mills, the association quotations having no attraction for buyers. The smaller concerns quote \$26, Cleveland, for 4 x 4 Bessemer, while the association mills hold for \$27.50, Cleveland, for the same material.

Old Material.—The market has been dead. There has been even less call than recently. Prices have held nominally as they were, with the understanding that most of them could be shaded with a good order. We continue to quote, nominally, all gross tons: Old Steel Rails, \$17; Old Iron Rails, \$20; Old Car Wheels, \$18; Railroad Malleable, \$14 to \$14.50; Cast Borings, \$6 to \$6.50. All net tons: No. 1 Railroad Wrought, \$14; No. 1 Busheling, \$11.50 to \$12.50; Wrought Turnings, \$9.50 to \$10.50; Iron Car Axles, \$22; No. 1 Cast Scrap, \$12.50 to \$13; Stove Plate, \$11.

St. Louis.

CHEMICAL BUILDING, November 4, 1903.—(By Telegraph.)

Pig Iron.—While some little demand exists for Foundry Iron, the policy of buyers is still along extremely cautious lines. The supposition that prices have not yet touched the lowest still keeps alive. Although much Iron is no doubt needed, buyers will not take hold of important transactions while the present uncertainty continues. We quote, f.o.b. St. Louis, as follows:

Southern, No. 1 Foundry.....	\$13.75 to \$14.25
Southern, No. 2 Foundry.....	12.75 to 13.25
Southern, No. 3 Foundry.....	13.75 to 14.25
Southern, No. 4 Foundry.....	12.00 to 12.50
No. 1 Soft.....	13.25 to 13.75
No. 2 Soft.....	12.25 to 12.75
Gray Forge.....	13.25 to 13.75
Southern Car Wheel.....	21.25 to 22.00
Malleable Bessemer.....	17.50 to 18.00
Ohio Silvery, 8 per cent. Silicon.....	22.00 to 22.25
Ohio Strong Softeners, No. 1.....	18.00 to 18.50
Ohio Strong Softeners, No. 2.....	17.50 to 18.00

Bars.—The movement of Bars, both Iron and Steel, through jobbing channels has been in very fair volume the past week. In lots from store quotation continues at 2c. to 2.10c.

Rails and Track Supplies.—There is a constant volume of inquiry, mostly for next year's delivery, with sales the past week of a moderate order. We quote as follows: Angle Bars, 1.95c. to 2.05c.; Bolts, with Square Nuts, 2.80c. to 2.90c.; with Hexagon Nuts, 2.95c. to 3.05c.; Spikes at 2.05c. to 2.15c.

Angles and Channels.—This class of material has been a very fair seller and jobbers' quotations continue as before at 2.25c.

Pig Lead.—The market has not shown any great degree of activity, but prices have held steady, nominally 4.30c. for Missouri brands and 4.32½c. for Desilverized.

Spelter.—Spot Metal is said to be scarce and commands 5.40c., while future supplies are nominally 5.30c.

Pittsburgh.

PARK BUILDING, November 4, 1903.—(By Telegraph.)

Pig Iron.—A large local interest came in the market last week and bought about 2000 tons of Foundry Iron. The business was split up between Northern and Southern furnaces, the price of the Northern No. 2 Iron being about \$14.50, Pittsburgh, or perhaps slightly less, and the Southern Iron about \$9.50, at furnace, equal to \$13.85, Pittsburgh. There is a little more inquiry for Foundry Iron, and large buyers continue to place contracts only for small lots, but in nearly every case urge prompt shipments, showing that stocks of Iron in the yards of the foundries are very low. An effort is being made to hold price of Bessemer Iron at \$15, Valley, but a few sellers, mostly outside furnaces, are shading this price from 10c. to 25c. a ton. We note a sale of 300 tons of Standard Bessemer Iron at about \$14.85, Valley furnace. Local Gray Forge is being offered at \$13.50 to \$13.75, Pittsburgh, and we note a sale of 200 tons at the latter price. Southern Forge is being offered as low as \$9, Birmingham, or about \$13.35, Pittsburgh.

Steel.—The meeting of the Steel Billet mills being held in New York City to-day is a very important one, and the action taken is being awaited with a good deal of interest. The impression prevails that a material reduction in the price of Bessemer and Open Hearth Billets may be made in order to conform to existing conditions. The outside Open Hearth plants have been taking away a good deal of tonnage from the mills in the agreement, and it is not likely that this will be allowed to continue. Open Hearth Billets have been offered as low as \$25, maker's works, but it is rumored that this price has been very materially shaded. Bessemer Billets are under better control, but very few sales are being made.

(By Mail.)

A very important meeting of the Steel Billet Association has been called, to be held in New York to-morrow (Wednesday) at 11 a.m. The present unsatisfactory condition of the Steel trade, both as regards demand and prices, will be thoroughly gone into and some radical action will likely be taken, looking to the betterment, if possible, of the Steel business. The operation of the Billet Association for some little time has been practically a dead letter, as Open Hearth Steel has sold recently at prices very much below those fixed by the Steel mills at the time the association was formed. Sales of Open Hearth Billets have recently been made at \$25 and probably materially under that price. While it is impossible at this time to forecast what may be done, it seems certain that a radical reduction in the price of Steel, to meet existing conditions, is imperative. Should this be done, it is not improbable that prices of Finished Material, such as Plates, Steel Bars and Structural Steel, which are controlled by agreements, may also be materially reduced. The meeting of the Steel mills to-morrow is the most important one held for many months, and the outcome will be very eagerly awaited by the trade.

General conditions in the Iron trade continue very unsatisfactory, the demand being excessively dull and prices weak. A number of blast furnaces have gone out of blast, owing to the light demand for Iron, and others are preparing to shut down. Bessemer Iron is nominally \$15 at furnace, but small sales have been made by furnaces outside the association at \$14.75, Valley. Northern Gray Forge Iron is about \$13.75, Pittsburgh, but if any large tonnage was offering, it is probable \$13.50 could be done. Prices on Finished Iron and Steel do not show much change, but on lines not controlled by price agreements they are weak. It is said that concessions in prices of Tin Plate are being made to induce consumers to place contracts. While the situation is probably not any worse than it has been for some time, yet it does not show any improvement.

The Pig Iron Committee, which has in charge the shut down movement of the blast furnaces in the Central West, reports that the furnace operations are falling in readily with the scheme and are blowing out their furnaces at a faster rate than was anticipated. At the present time 20 or more stacks in the Pittsburgh and Valley districts are idle, and more furnaces will be blown out in a short time. A semi-official list of the idle stacks is as follows: Ella, at Sharpville; Clair, Sharpville; Laura, of Republic, at Haselton; three Carnegie stacks at Youngstown; one, Hubbard, Alice, at Sharpville; Mattie, at Girard; one Andrews and Hitchcock, at Youngstown; Mary, at Lowellville; one Shenango, at Sharpville; Rebecca, at Kittanning; one Duquesne stack; two Edgar Thomson; one Carrie, three Isabella; Edith, in Allegheny; two Bellaire stacks; Sharon of Carnegie Steel, at Sharon, and perhaps two or three others. Grace, of Brier Hill Iron & Coal Company, at

Youngstown, will go out in a few days, as will the furnace of Youngstown Steel Company, at Youngstown. It is estimated that the reduction in output of Pig Iron in the Central West in November, December and January will approximate 1,000,000 tons. A meeting of the Pig Iron Committee has been called and will be held in the offices of D. G. Ker, in the Carnegie Building, Pittsburgh, on Friday, November 6. It is understood the committee is gathering data as to the number of furnaces that have gone out and as to the actual reduction made in output of Pig Iron, and these figures will be submitted at the meeting to be held on Friday.

Plates.—Tonnage in Plates continues extremely light, and a number of the largest mills continue idle for lack of orders. There is not much indication that demand will show improvement in the near future. We quote: Tank Plate, ¼-inch thick and up to 100 inches in width, 1.60c., at mill, Pittsburgh; Flange and Boiler Steel, 1.70c.; Marine, Ordinary Fire Box, American Boiler Manufacturers' Association specifications, 1.80c.; Still Bottoms Steel, 1.90c.; Locomotive Fire Box, not less than 2.10c., and it ranges in price up to 3c. Plates more than 100 inches in width, 5c. extra per 100 lbs. Plates 3-16 inch in thickness, \$2 extra; gauges Nos. 7 and 8, \$3 extra; No. 9, \$5 extra. These quotations are based on carload lots, with 5c. extra for less than carload lots; terms net cash in 30 days.

Muck Bar.—The market is practically lifeless, and the nominal price of best grades of Muck Bar is \$26, Pittsburgh. It is practically certain, however, that if any business were offering this price would be materially shaded and that \$25 or lower could be done.

Ferromanganese.—A sale of 25 tons of English Ferro is reported at \$48, Pittsburgh. Large consumers are covered for a long time ahead, but if there are any large contracts in the market \$47 for English or domestic could probably be done.

Iron and Steel Bars.—Prices of Iron Bars have still further declined, and they are being freely offered at 1.40c., Pittsburgh. Tonnage in both Iron and Steel Bars is very light, and a number of the leading mills are idle for lack of orders. We quote Iron Bars at 1.40c., Pittsburgh, usual extras, but on a nice specification a lower price might be made. We quote Steel Bars at 1.60c., Pittsburgh, in carloads and larger lots. For quantities less than 2000 lbs., but not less than 1000 lbs., \$2 a ton additional is charged, and less than 1000 lbs., \$6 additional.

Steel Rails.—No large contracts have recently been given out, and the railroads are evidently waiting for a lower price on Rails before placing their contracts. We quote at \$28, at mill, for Standard Sections.

Structural Steel.—Only a fair amount of tonnage is being placed, a great deal of work being postponed on account of tight money market and labor troubles. However, tonnage placed in October compares favorably with the same month last year. We quote: Beams and Channels, up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 up to 6 x 6, 1.60c.; Zees, 1.60c.; Tees, 1.60c.; Steel Bars, 1.60c., half extras, at mill; Universal and Sheared Plates, 1.60c.

Spelter.—There is a moderate demand for Spelter, and prices are fairly firm. We quote prime Western grades for spot shipment at 5.50c. to 5.55c., f.o.b. Pittsburgh.

Rods.—The market is quiet and we do not hear of any transactions. We quote Bessemer and Open Hearth Rods at \$33.50 to \$34, Pittsburgh. Chain Rods are held at about \$35, Pittsburgh.

Sheets.—In several of the nonunion Sheet mills wages have been reduced about 20 per cent. and the limit of output has been removed. Inquiry is light and some of the mills are disposed to shade prices, believing they will be able to buy Sheet Bars at lower figures before long. We quote No. 27 Black Sheet, box annealed, one pass through cold rolls, at 2.50c. and No. 28 at 2.60c. For desirable specifications it is probable these prices would be shaded. We quote Galvanized Sheets at 75, 10 and 2½ per cent. off for ordinary specifications in carloads, and 75, 10 and 5 per cent. off for desirable specifications and large lots. Jobbers charge the usual advances over above prices in small lots from store.

Hoops and Bands.—There is nothing of interest to note, and the amount of tonnage being placed is only fair. We quote: Cotton Ties, 87c. in 10,000-bundle lots or over; 92c. for carloads; Steel Hoops, 1.90c. in 250-ton lots and 2c. for carloads; Bessemer Bands, 1.60c. to 1.70c. for Open Hearth. Extras as per Steel card.

Skelp.—The market is very quiet and prices are weak. We quote Grooved Iron and Steel Skelp at 1.40c. to 1.45c. and Sheared at 1.50c., Pittsburgh.

Merchant Pipe.—Demand for Butt Weld sizes of Pipe is light, but on the larger sizes the mills are well sold up. While there is no change in discounts, some concessions in prices are being made by the mills on the smaller sizes. Discounts to consumers in carloads are as follows:

	Steel.		Wrought Iron.	
	Black. Per cent.	Galv. Per cent.	Black. Per cent.	Galv. Per cent.
1/4, 1/2 and 3/4 inch.....	68	58	65	55
1/2 inch.....	70	60	67	57
3/4 to 6 inches.....	75	65	72	62
7 to 12 inches.....	69	59	66	56

Merchant Boiler Tubes.

	Steel.	Iron.
1 to 1 1/4 inches.....	42 1/2	39
1 1/4 to 2 1/2 inches.....	55 1/2	38
2 1/2 to 5 inches.....	61	48
6 to 13 inches.....	55 1/2	38

Scrap.—The market continues very quiet, and prices depend altogether on conditions attached to the transaction. Forced sales of Scrap have been made at very low prices.

Coke.—We may state officially that the H. C. Frick Coke Company are again in the market as sellers of strictly Connellsville 72-hour Foundry Coke. It will be recalled that about a year ago the company retired from the market as sellers of Foundry Coke, owing to the fact that their entire output was used in blast furnaces of constituent interests of the United States Steel Corporation. As a number of these blast furnaces are now idle, the company have surplus Coke which they are offering to the foundry trade. The output of Coke in the Connellsville region last week fell off about 30,000 tons over the previous week, and shipments were 36,000 tons lighter. Out of 22,597 ovens in the Connellsville region proper nearly 8000 are idle, and the number will likely be increased to 10,000 before this week is out. Of the 77 active plants in the region only 22 plants ran six days last week, the others running from two to five days. Output last week was 148,191 tons, showing a decrease of about 50 per cent. in output of two months ago. This falling off in output and the blowing out of ovens are caused by the heavy decline in demand for Coke, due to the blowing out of so many blast furnaces. It is the general impression that early in December the leading Coke interests will take in hand the matter of making a material reduction in wages of Coke workers. Coke labor is now being paid on the basis of about \$3 a ton for Furnace Coke, and at the present time it is selling at \$1.75 a ton. In view of this a material reduction in Coke labor seems imperative. We quote strictly Connellsville Furnace Coke at \$1.75 to \$2 a ton. Main Line Coke outside of the Connellsville region can be bought at lower figures.

The Field-Evans Iron Company announce that they have taken over the office of J. K. Dimmick & Co., 801-2 Murtland Building, Pittsburgh, Pa., together with their furnace agencies. In addition to other sources of supply the company have the sole sale in Pittsburgh for the Foundry and Forge Pig Iron produced by the Sloss-Sheffield Steel & Iron Company and the La Follette Coal, Iron & Railway Company. They now maintain offices in Cincinnati, Chicago, St. Louis, Detroit and Cleveland, as well as in Pittsburgh, for the sale of Pig Iron and Coke.

Cincinnati.

FIFTH AND MAIN STS., November 4, 1903.—(By Telegraph.)

While the Pig Iron market is still in a very unsatisfactory state and new business is slack and scattering on the whole, there are, nevertheless, some very interesting features which perhaps mean that the turning or at least stopping point has been reached. One of the most interesting of these is the fact that export trade is really cutting a figure in the market. It is stated here with authority that one of the large Southern furnaces has within the past 48 hours closed a deal with an English firm for 15,000 tons of Iron on the basis of \$9.50, Birmingham, for No. 2 Foundry and \$8.50 for Gray Forge. In the local field a large buyer bought about 15,000 tons on the basis of \$9.75 for No. 2 Foundry, Birmingham basis. This purchase was not all from one seller and was made nearly a week ago. Sales made to-day by one party amounted to 2000 tons on the Birmingham basis of \$9.50 for No. 2, \$9 for No. 3, \$8.50 for No. 4 and \$8 for Gray Forge. Other sales are known to have been made on basis ranging up to \$1 higher than the minimum figures just quoted. These sales, however, hardly represent the market, as the buyers were after the quality represented in the brands they wanted, and the additional cost did not enter materially into the calculations. The general market, however, is dull and promises dullness, at least until buyers are convinced that the bottom has been touched. Freight rates from Hanging Rock district to Cincinnati, \$1.15, and from Birmingham, \$2.75. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1.....	\$12.75 to \$13.25
Southern Coke, No. 2.....	12.25 to 12.75
Southern Coke, No. 3.....	11.75 to 12.25
Southern Coke, No. 4.....	11.25 to 11.75
Southern Coke, No. 1 Soft.....	12.75 to 13.25
Southern Coke, No. 2 Soft.....	12.25 to 12.75
Southern Coke, Gray Forge.....	10.75 to 11.25
Southern Coke, Mottled.....	10.75 to 11.25
Ohio Silvery, No. 1.....	18.15 to 18.65
Lake Superior Coke, No. 1.....	15.65 to 16.15
Lake Superior Coke, No. 2.....	15.15 to 15.65
Lake Superior Coke, No. 3.....	14.65 to 15.15

Car Wheel and Malleable Irons.

Standard Southern Car Wheel.....	\$20.75 to \$21.25
Lake Superior Car Wheel and Malleable	20.00 to 20.50

Birmingham.

BIRMINGHAM, ALA., November 2, 1903.

The Iron market is not so ragged as it has been. There has been a settling down in price and the variations have been confined to a narrower range. We have been and are now pretty close to a basis of \$10 for No. 2 Foundry, with very limited sales at \$9.75. The offerings at this price were so restricted that we can very properly characterize the few sales made as chance sales. The bulk of the sales were around \$10 and ranged up to \$10.50 and \$10.75, the higher prices being for small orders. There was an increase in the number of orders and there was a material improvement in the magnitude of the orders accepted. Accepted business was booked the past week in which were orders ranging from 4000 tons down to 1000 tons. There was a constant stream of smaller orders during the week for lots running from 1000 tons down to single car lots. These latter orders all called for prompt shipment, and the various shipping departments of the furnace interests have been rushed in their efforts to load sales. But there has been difficulty in securing cars, and every one of them is belated in shipments. There is very little likelihood of any improvement in this respect in the near future. One interest asked for 100 cars and secured 15 of them. Another interest received an order at an acceptable price, coupled with the condition of prompt shipment. It was with the understanding that shipment should be made in three weeks. These examples will give buyers some idea of the obstacles in the way of prompt transit of their purchases. The same difficulty prevails as regards Coal. Complaints as to the failure to secure needed cars for Coal shipments are beginning to be very free. There is a report floating around of one sale of Iron of 10,000 tons, but no confirmation of it can be obtained. A moderate amount of No. 1 Foundry was sold at \$10.50, and in one case some went at \$10.75, meeting a required analysis. Gray Forge was sold at both \$8.75 and \$9, and some No. 3 Foundry went at \$9.50 and \$9.75. The demand was mainly for the Foundry grades, though some Pipe interests took on a limited amount.

The prospect for export business is closely studied. There have been bids received that were on the basis of \$8.25 for Gray Forge, but they were all declined, and there were offers made in return at \$8.75 that were not accepted. The freight rate varies from \$3.50 to \$2.50. There is only 50 cents per ton between buyers and sellers and a slight concession in freight would inaugurate the trade. And that is a not improbable happening. Those in a position to fairly judge of the probability of a renewal of this branch of the Iron trade speak with great hopefulness of its revival in the very near future. Efforts to accomplish that result will not cease. In one sense it is a matter of necessity, and as vessels loaded with cotton prefer Iron to all other ballast, they will strain a point to secure it. That, with a very slight concession on the part of either seller or buyer, will start the ball to rolling. The inquiry for delivery the first half of 1904 is increasing and can be called very fair. There is no inclination to indulge in promiscuous selling for that delivery. Bids on the basis of \$10 for No. 2 Foundry have been declined, while information from good sources is that \$10.25 has been reluctantly accepted in some cases.

The trade with Eastern seaboard points and points tributary to them has increased. While we cannot say it is active, we can affirm that it is of respectable proportions. The West has also increased its demands, and the buying contingent has had several important interests added to their ranks. So far they have not been keen buyers, but they have taken some very respectable lots. The week closes with several bids on hand at prices a notch below sellers' views. As to co-operation looking to reduced output on the part of the furnaces, there has nothing definite occurred since last letter. The committee having the matter in charge met and adjourned without formulating any plan. They yet lack signatures to make it effective. The object will be attained without co-operation. Progress in that direction is being made every day, and the estimate heretofore furnished of the number of furnaces that will be closed down by the 10th of this month is accepted by the trade here as approximately correct. Business at the various Pipe works is of a limited character, and prices are rather easy. Four-inch Pipe is quoted at \$25, 6-inch at \$24, 8, 10 and 12 inch at \$23, 14, 18 and 20 inch at \$22.50, and 24 and 30 inch at \$22. It is probable that under circumstances favoring the buyer some shading of these figures could be obtained.

Some orders have recently been secured by the Steel mill for both Rails and Billets, and rumors to the effect that an order for 25,000 tons of Rails had been taken for the L. & N. R. R. were circulated. The order was placed months ago and reported at the time in these letters. Delivery will commence in January.

The No. 2 City Furnace of the Sloss-Sheffield Company

lately overhauled and which was rated as a 200-ton furnace, has been averaging of late 245 tons, and all of it the high Foundry grades. The monthly output now of that company is 36,000 tons.

The accumulation of Iron in the yards is rather at the moment on the decrease, as the sales of late have been a shade more than the current output. But unless the situation as to cars changes this will be only temporary. The reports concerning the formation of a pool of 50,000 tons, to be placed in foreign markets at current values, are simply "figments of the imagination." What we most need is a pool to furnish cars for the shipment of Iron sold.

The various shops report that they are running full time, but in the majority of cases on old business. The Means-Fulton Company are turning out work for Texas points, as also for Georgia points, in the way of wheat tanks and water tanks and towers, and tanks for the oil fields. Others report a fair amount of new business under negotiation, while those catering to the needs of local interests are, as a rule, always full of business.

(By Telegraph.)

BIRMINGHAM, ALA., November 3, 1903.

Two lots of 500 tons each of Iron have been worked by the Sloss-Sheffield Company for export, one-half going via Mobile and one-half via Pensacola. Both lots are destined to Great Britain. Sellers assert that price obtained was on basis of inside prices to the domestic trade. Last week the foreign price was within 50c. of trading point. The inference is that freight concessions induced the sales. Other offers are being considered. There is no other feature of interest to add to market letter.

New Rules for International Association of Machinists.

It seems that there has been some misunderstanding among some of the members regarding the new rules adopted by the International Association of Machinists. James O'Connell, president of the organization, has recently sent out a circular letter explaining the points in doubt, and which is as follows:

The General Executive Board at its last session, held at headquarters, considered the question of placing a proper construction on our general laws adopted at the Milwaukee convention relative to the qualifications for membership in our association, and I am advised by the General Executive Board to issue this circular of instructions with the request that it be carefully adhered to in order that the best interests of our organization may be served.

"Article 1, constitution of subordinate lodges, specifies that any person working in a machine shop and engaged in any manner with the making and repairing of machinery may be admitted to membership in the association after paying the required fee, taking our obligation, and who is receiving the minimum rate of wages in his class in his locality."

This article is construed by the General Executive Board to mean that operators of the following classes of machinery are classified as machinists and eligible to membership in our association:

General workmen, floor hands, vise hands, lathe hands (including Jones & Lamson lathes, Gisholt lathes, American turret lathes, axle turning lathes, or operators on similar machinery), plane hands, shapers, slotting machine hands, milling machine hands (including standard plane or universal milling machine hands), boring mill hands, gear cutter hands, radial and other drill press hands (not to include those employed on small common drill presses used exclusively for drilling rough holes on rough work), operators of semiautomatic machinery where skill in adjusting work and tools is required, tool makers, die sinkers, and operators of metal working machinery used in or about machine shops where special skill of any kind is required.

Men engaged in the erection and assembling of new machinery, or the repairing of old machinery, including men employed on locomotive steam pipes, men engaged in building new engine trucks from drawings, or similar classes of work that may have been formerly done by all around machinists.

Operators of nut tapping machines, bolt cutters, plain drill presses (upon common rough work where no skill is required), power saws, and operators of similar ma-

chinery, including handymen and helpers, are not admitted to membership.

The word "helper" must not be confused with the specialist, or the man who is performing the work of a machinist. A helper is one who is supposed to be helping or assisting a machinist, and therefore is not eligible to membership.

The question of organizing special lodges of any of the above named operators is one that can only be considered upon special correspondence with the grand lodge. In some instances it may be advisable to organize a lodge in a city or a locality and in others it may be very injurious to our association, hence this matter will have to be dealt with as each case arises.

Every member of the I. A. of M. must carry the same book and card; no special books or cards can be got up by any of our local unions, nor issued to any members of our association. All members of the I. A. of M. pay the same dues, enjoy the same benefits and therefore hold equal membership. The same stamps must be used in every member's book regardless of what division of the trade he may be employed at.

If any questions arise in any city or locality relative to the admission of members to our association and there is any doubt in the minds of the members as to the qualification of the applicants for membership, correspondence should be taken up at once with the grand lodge for advice and instructions, or if there is any doubt as to the proper application of our new laws as adopted by the Milwaukee convention, write for full information, which will be cheerfully furnished.

The Cherry Valley Iron Company.

About November 15 the Cherry Valley Iron Company of Pittsburgh, Pa., will blow out their Fannie Furnace at West Middlesex, Pa., and it will be dismantled. Some time ago this company placed a contract with the Riter-Conley Mfg. Company of Pittsburgh for a new stack, 17 x 70 feet in size, and this stack is now well on toward completion. The present equipment of the old stack will be connected up to the new stack, which will require about two months' time. One new iron stove has been added, also two new blowing engines and two new Wheeler boilers. A number of changes have been made in the railroad tracks and trestles, and the new stack is expected to be in operation by January 15 and to turn out about 225 tons of Bessemer iron per day.

The Cherry Valley Iron Company also operate Cherry Valley Furnace at Leetonia, Ohio, and have placed a contract with the Riter-Conley Company for a new stack at Leetonia, to be 18 x 80 feet in size. They have recently built at Leetonia three new Massicks & Crookes hot blast stoves, 21 x 85 feet, and have added three new engines to the equipment. They have also erected two new trestles and are building 60 new coke ovens, which, with the 140 now in operation, will give them a total of 200 coke ovens. It is expected to blow in the new stack about April 1 of next year, and it will have a daily capacity of 300 tons when running on foundry iron and 350 tons when running on Bessemer. Both stacks at Leetonia and West Middlesex are operated with skip hoists. When the two new stacks are in operation the Cherry Valley Iron Company will have a daily output of very close to 600 tons of Bessemer iron.

A Letter of Warning to Machinists.—James O'Connell, president of the International Association of Machinists, recently addressed a lengthy letter to the members of that organization, calling attention to the fact that manufacturing business of all kinds was falling off largely in volume, and warning the members not to engage in strikes or make demands for increased wages at this time. He further says: "A very great effort should be made to strengthen our ranks wherever possible, and above all, to maintain the present organization, in order that we may be in a position to maintain the conditions of employment we have already secured, and to prevent any attempt on the part of our employers to take from us the shorter workday, which we have so successfully battled for, and further, to prevent any attempt on the part of the employers to reduce the wages."

Iron and Industrial Stocks.

The past week has been comparatively uneventful, transactions in industrial stocks having been only moderate in volume and no very important influence operating to sway prices up or down. The fluctuations in active stocks were as follows up to Monday evening of this week, Tuesday being a holiday: Can common, highest 27%, lowest 2½%; preferred, highest 28% and lowest 27¼%; Car & Foundry common 21 and 18½, preferred 68¼ and 65; Locomotive common 13% and 13, preferred 78 and 76½; Colorado, 32¼ and 31; Crucible Steel common 4½ and 4, preferred 33 and 31; Pressed Steel common 29½ and 26½, preferred 70¼ and 68¼; Republic preferred 53 and 50½; Tennessee Coal 29½ and 28½; United States Steel common 14½ and 13½, preferred 60 and 58¼. The new United States Steel 5's, which had fluctuated between 71 and 72¼ during the week, sold, ex-interest, on Monday at 69¼ to 69½. The last sales up to 1.30 p.m. on Wednesday were as follows: Can common 3, preferred 28; Car & Foundry common 20¼, preferred 68¼; Locomotive common 13¾, preferred 78½; Colorado 32½; Pressed Steel common 27½; preferred 69¼; Republic common 7¼, preferred 51; Tennessee 28¾; Sloss-Sheffield common 25, preferred 66. United States Steel Stocks were under pressure, reported to be due to realizing by a retiring official. The common at the time noted was selling at 12%, preferred 57¼ and new 5's 68.

The La Belle Iron Works, Steubenville, Ohio, recently issued a circular letter to their stockholders in reference to a proposed new issue of bonds. The circular states that by a unanimous vote of the directors it was determined to issue \$2,500,000 of 5-20-year 6 per cent. first mortgage gold bonds, dated December 1, 1903, interest payable semi-annually, \$100,000 to be retired at par each year, beginning December 1, 1908, the company to have the privilege of paying and retiring thereafter further amounts of said bonds at 105, these bonds to be secured by first mortgage on the real estate of the company, located in Ohio and Brooke counties, W. Va., and in Jefferson County, Ohio, and by the stock of the Pitt Iron Mining Company, holding the company's ore lands in Minnesota, and the La Belle Coke Company, holding the company's coke and coal lands in Pennsylvania, all of which stock is the property of the La Belle Iron Works. The actual cost of these properties, which are new and of most modern construction and equipment, as shown by the audit of chartered accountants, Price, Waterhouse & Co. and Jones, Caesar & Co., as of July 4, 1903, after deducting such depreciation as was thought proper, is \$6,582,069.77. Since the date of audit, July 4, 1903, there has been expended for new and additional construction to be covered by the mortgage \$310,982.43, which brings the total cost of property, as of September 30, 1903, to be covered by the mortgage to \$6,893,052.20. The audit shows, further, that the company have personal property to the amount of \$3,083,467.62, consisting of cash, accounts and bills receivable, finished products and material in process of manufacture. This makes the total assets of the company, September 30, 1903, \$9,782,629.63. The circular also states that the bonds are offered to the stockholders at 90, in consideration of the fact that the recent capital stock was subscribed for and taken at 110. The offer expires November 20, and thereafter any unsold portion of the bonds will be offered to the general public at par. Payments of the bonds will be as follows: Fifty per cent., December 1, 1903, 25 per cent., January 1, 1904; 25 per cent., February 1, 1904.

The Pressed Steel Car Company's statement of operations for the quarter ended September 30 shows a decrease in net earnings of \$716,562. The statement is as follows:

	1903.	1902.	Decrease.
Net earnings.....	\$628,964	\$1,345,526	\$716,562
Fixed charges.....	47,100	59,224	12,124
Net income.....	\$581,864	\$1,286,302	\$704,438
Proportion preferred dividend.	218,750	218,750
Balance.....	\$363,114	\$1,067,552	\$704,438
Depreciation reserve.....	70,000	80,442	10,442
Surplus.....	\$293,114	\$987,110	\$693,996

The report for the first nine months of the calendar year makes the following financial showing:

	1903.	1902.	Decrease.
Net earnings.....	\$2,644,167	\$3,304,738	\$660,571
Fixed charges.....	142,394	179,336	36,942
Net income.....	\$2,501,773	\$3,125,402	\$623,629
Proportion preferred dividend.	656,250	656,250
Balance.....	\$1,845,523	\$2,469,152	\$623,629
Depreciation reserve.....	225,000	210,723	*14,277
Surplus.....	\$1,620,523	\$2,258,429	\$637,906

* Increase.

Dividends.—Shelby Iron Company have declared a dividend of 5 per cent., payable November 16. Books close November 5 and reopen November 17.

Ashton Valve Company have declared the regular quarterly dividend of 1½ per cent., payable November 16.

Columbus & Hocking Coal & Iron Company have declared a dividend of ¼ per cent. on the common stock, payable November 14.

Metal Market.

NEW YORK, November 4, 1903.

Pig Tin.—Prices are unchanged, and there is no change of importance in general conditions. The excessive premium on futures has disappeared entirely, as has all fear of a shortage in deliveries. No increase in demand from consumers is to be noted. The market is quiet at 25.75c. to 26c. for spot to December delivery. The London market cables £118 5s. for spot and £119 5s. for futures. Deliveries during the month of October amounted to 2700 tons, the total increase for the first ten months of this year now being 4800 tons, as compared with same period of last year. The deliveries in London and Holland during the first ten months of this year show a decrease of 380 tons, as compared with the same period of last year. Shipments from Straits for October were 10 tons smaller than for the same months of last year; for the first ten months of this year they show an increase of 1391 tons, as compared with the corresponding period of last year. Australian shipments during October were 135 tons over October, 1902; the total for the first ten months of this year shows 1038 tons more than the same period last year. The total visible supply on October 31 is 538 tons below that of October 31 of last year:

	Tons.
Arrivals at the Atlantic ports amounted to.....	3,810
Total arrivals since January 1, 1903.....	31,562
Of which from Straits by direct steamer.....	12,658
Of which from United Kingdom.....	17,205
Of which from Holland.....	936
Of which from European Continent.....	765
The deliveries for October we figure as.....	2,700
Total deliveries since January, 1903.....	33,400
Deliveries same period in 1902.....	28,600
The shipments from Straits amounted to.....	4,125
Against previous month.....	4,465
Against October, 1902.....	3,745
Australia shipped.....	437
Against previous month.....	415
Against October, 1902.....	302
Statistics for the United States—Pacific ports excluded—	
October 31, show as follows:	
Stocks, including on dock and arrivals.....	2,284
Afloat	2,135
Total.....	4,419

The total statistics for Europe and the United States show:

	Tons.
Total visible supply October 31, 1903.....	15,515
Against visible supply September 31, 1903.....	17,249
Against visible supply October 31, 1902.....	16,953

Copper.—All of the excitement which attended the shutting down of the Montana mines has subsided and the market has again relapsed into a quiet, sluggish state. While the "official" quotations have not been changed, offerings of outside lots are again being made at ¼c. below them. Business is extremely quiet, and consumers show no signs of being in urgent need of supplies. The "official" quotations are Lake, 14c.; Electrolytic, 13.75c.; Casting, 13.50c. London declined steadily during the week closing to-day: £58 10s. for spot and £58 2s. 6d. for futures. Best Selected closed £64. The total exports for the month of October aggregated 12,846 tons.

Pig Lead.—The market has continued steady and is without new feature. Demand is moderate and spot supplies still somewhat scarce. Spot Lead is firm at 4.50c. The American Smelting & Refining Company continue to quote Desilverized at 4.40c. for 50-ton lots and 4.42½c. for car-load lots, New York delivery, shipment within 30 days. The London price at the close to-day was £11 5s. St. Louis reports 4.25c.

Spelter.—Spot has declined a shade, and is now quoted 6c. Delivery during the latter part of this month can be had at 5.55c. St. Louis has declined to 5.30c., and the London cables are 7 shillings 6 pence higher, with £21 2s. 6d.

Antimony.—The market is dull and easy. Cookson's has declined to 7c. Hallett's is unchanged at 6¼c., and other brands at 5¼c.

Nickel.—Is without change, 40c. to 45c. being quoted for large lots, and 50c. to 60c. for smaller quantities.

Quicksilver.—Business is fair at \$47.50 for flasks of 16½ lbs. London cables £8 10s.

Tin Plate.—No change has taken place in this market. Transactions are mainly in jobbing lots, and business, as a whole, is of a light order. Prices are unchanged. The American Tin Plate Company quote \$3.80 per box of 14 x 20 100-lb. Cokes, f.o.b. mill, equivalent to \$3.99, New York.

Lake Mining Matters.

DULUTH, MINN., October 31, 1903.—Reports from the Gogebic range of the discovery of what is called the south vein of the Gogebic are not warranted by the facts in the case, which do not indicate any very promising formation. At the various Schlesinger and Corrigan mines of the Gogebic range there have been reductions in the force employed. Palms, Anvil, Newport and Bonnie mines of the Schlesinger group have cut down about 200 men within the week. No. 4 shaft at Anvil has closed. Great Western, Lamont and Armenia mines of the Corrigan group at Crystal Falls have closed down, thus leaving but three mines at that place still in operation. All the five mines at Ely, Vermillion range, with the exception of Chandler, have decided upon curtailment, and will lay off parts of their night shifts and cease for the present certain improvements that were under way. On the other hand the big stock piles of the Minnesota hard ore mine at Soudan, closed some weeks ago, have been attacked by loading shovels and will be shipped this fall, in all about 150,000 tons. Tobin mine of the Corrigan group at Crystal Falls is working very heavily, and will operate all winter at capacity. It has the making of a large mine and will be very thoroughly developed, unless the management changes its mind.

Reductions of Wages.

The late reductions of force and curtailment of operations in the iron mines have been the occasion for a general change to a ten-hour day at points where eight hours had been in force. Pay remains the same as before. There is a feeling among miners that a reduction of wages is likely to come about, but it is hardly probable that this will be unless, after the new year, the mining companies see they cannot maintain operations without reducing costs materially.

All the tow barges and about half the steamers of the Pittsburgh Steamship Company's fleet (United States Steel Corporation) will go into winter quarters immediately as they arrive from Duluth. They will be laid up here for the season. Only about 30 steamships will operate into November. Estimates of the October ore movement at 2,250,000 tons are too low, but it will fall materially under the business of the corresponding month last year. Minnesota alone has shipped about 1,600,000 tons in the month, and allowing very great reductions for the old ranges the total should be full 2,500,000 tons. Up to date this year Minnesota mines have shipped 14,000,000 tons, or nearly 300,000 tons more than last year to the same time, and no less than 4,000,000 tons ahead of the corresponding period of 1901. Comparisons with 1902 are misleading, on account of the excessive increase of last year.

At the new Breitung mines in Negaunee they are now shipping 500 tons a day to lower lake ports; all this ore comes from the upper level of the Mary Charlotte. It is about a year since operations were commenced on these two properties, and in that time rapid progress has been made, and both mines are to be very well opened by another spring. Whether the Davis and Milwaukee mines, referred to several weeks ago, are to be opened this year depends on the state of the ore market, and it is now a rather doubtful question.

The Sellwood Mines.

What are known as the Sellwood mines of the Mesaba range are closing down for the winter, having mined their minimums or allotments. These are as follows: Kanawha, closed permanently with a shipment this year of 35,000 tons, making its full record 180,000 tons; it was a small pocket of ore in the northwest quarter of section 1, 58, 16. Cass, another small property in section 2, same township, has shipped 60,000 tons this year and is closed. It was opened this year, and produces a good grade of ore. This mine is generally supposed to be the property of the Zenith Furnace Company of Duluth, but through a slip did not pass into their hands. Leetonia, section 11, 57, 21, has closed with a shipment of 200,000 tons. It is a big, open pit mine and a large amount of

stripping has been done this season in preparation for increased mining another season. Cypress, adjoining Leetonia, closes this week with 125,000 tons for the year. It is also a new property. Pearce and Morrow, sections 28 and 29, 58, 20, are through with about 50,000 tons each, their minimums. Longyear, in 5, 57, 20, is through with 85,000 tons, a little more than its minimum. It carries over a stock pile of 25,000 tons made last winter and not shipped. Croxton, in 13, 58, 20, is through with 101,800 tons. It is an open pit milling mine. Hawkins and Agnew, belonging to the International Harvester Company, and under the management of Mr. Sellwood, are through this week with about 110,000 tons each. Hawkins is an open pit mine and Agnew is to be made such for another year. It has a thickness of surface of about 60 feet, and the company have commenced stripping it without contracts. About 1,000,000 yards of surface and 300,000 yards of taconite will be taken off, making the job one of the heaviest undertaken for a long time. The removal of 1,657,000 yards of earth and 304,000 of taconite, including the slopes, will uncover 5,309,000 tons of ore, and this will all be taken out before the present job is completed. The taconite is not a thorough capping over the ore but is in bunches and shelves, and runs in thickness from nothing to about 10 feet. There is an average overburden over the ore in this mine of 63 feet, and an average thickness of ore below the stripping of 121 feet, making it an ideal proposition for stripping, and one in which the cost of stripping and mining will be very low. Just what Mr. Sellwood expects to show in the way of costs for this stripping operation cannot be told, but it is doubtless well under 30 cents a yard, and the cost of breaking and removing the taconite should be probably less than \$1 a yard. He has let contracts to stripping firms in which they have moved both earth and rock for less than these figures. At his La Rue mine, adjoining the Hawkins on the north, they have been at work only since the railroad connection was made in August last, have shipped so far about 35,000 tons, and hope to move 10,000 tons more before they close down. This is a stripped property also and is very easy to mine. Even so, this record for the past two months is a remarkable one.

Mr. Sellwood's Brotherton and Sunday Lake mines, on the eastern Gogebic, will close for the season shortly with a production of about 100,000 tons each for the season, about their average. He is also in charge of mining operations in the Baraboo district for the International Harvester Company. Here he is getting out but little ore now, as the railroad connection has not been made, but the upper drift is in 800 feet and the lower 500 feet, and there are some 25,000 tons of ore on surface. It will be easy to stope and hoist 500 tons a day as soon as railroad connection has been made to the property.

Mr. Sellwood has what would be called by most operators extreme views as to certain methods of mining, but he has been remarkably successful. He does not care particularly what his royalty is, so long as the combined cost of mining and royalty is well down and the grade of ore produced is such as to show a profit. He does not think the limit of stripping has been anywhere near reached on the Mesaba range, and believes there is scarcely a mine on the range that will not bear the removal of its overburden. Instead of 1 foot of stripping to 1 of ore beneath it, which most men consider advanced practice, he believes that it will pay to take 2 feet of surface to every 1 foot of ore below, other conditions being equal.

One stripping contracting firm on the Mesaba range employ 11 large shovels and 40 locomotives of various sizes. This gives an idea of the importance of these operations and the extent to which they are carried. There are eight or nine large firms engaged in this business on that range.

Copper mines on the lake are shipping metal as fast as possible to clean up before the close of navigation. There is some \$8 per ton difference in freight between lake and rail and all rail, and this will be taken advantage of by cleaning off docks and smelters as completely as possible.

D. E. W.

The Philadelphia Machinery Market.

PHILADELPHIA, PA., October 31, 1903.

There have been no developments in the Philadelphia machinery market during the past month to warrant the opinion of an early resumption of business activity in machinery circles. In past years, even during the most prosperous times, business during the last two months of the year has gradually shaded off, manufacturers being inclined to postpone the placing of orders of any magnitude except in cases of actual necessity, so as to clear up stocks previous to stock taking and the preparation of annual statements. That this will follow this year is quite natural, and from that point alone active business should scarcely be looked for before January. Aside from that, however, there is a business depression which extends even beyond machinery circles. The lowering prices of raw materials, unsettled financial conditions and the labor question all tend toward a lack of confidence in the prevailing conditions. In most cases it is not the question with manufacturers as to keeping their plants busy at the present time, but rather where orders are to come from when those already on hand have been filled. Some are finding their stockrooms now more than comfortably filled, and have reached a point where a few hands here and there are being dispensed with—for economy's sake. Curtailment of expenses has become general, and what purchases are being made are contracted for at the lowest possible figures. Inquiries have varied during the month; with some there has been an increase, with others a falling off. In most cases, however, there is a postponement in final closing of business. New orders are few, and are limited to immediate requirements. Most of the larger plants still keep busy on orders in hand; some with work ahead for several months, others have but a month's work ahead, with the plants being operated at short capacity. Some manufacturers are, however, receiving a few orders, which help out materially. Manufacturers of locomotives, heavy machinery, engines and large special tools have probably the most work ahead. Medium sized plants vary in the amount of work on order; some are busy with good business in hand, while others are curtailing production and expenses. Labor conditions are anything but satisfactory. Enterprises have in some instances been entirely held up, owing to trouble in building circles, which has its effect in the demand for equipment of contemplated manufacturing plants. In some instances it is reported that after concessions had been granted to labor less production per average man has resulted, meaning thereby a higher cost of manufacture. The general uncertainty from this source has caused a hesitancy in the closing of other matters, which ultimately mean business to the machinery and allied interests.

There is a tendency in the trade toward more active efforts for export business, but conditions abroad are probably not in such shape as to produce much of a demand from that source. Some manufacturers who have been exporting regularly report a falling off in orders. Prices, too, at present figures are rather prohibitive for active export business.

The demand for medium and light standard tools, equipment, &c., is light, and this branch of the trade is probably duller than others. Stocks in these lines have been increasing steadily, and it is generally possible to give a purchaser almost immediate delivery. On the machinery floor of the Philadelphia Bourse dealers mostly report a falling off in sales when compared with September. It is hard to get any one to talk business and harder to place an order; very little business of any magnitude has been transacted.

The market for the smaller engines, tools, boilers, machine shop supplies, &c., is dull, following the rest of the trade, with little indication for immediate betterment.

The various foundries, both iron and steel, are not as busy as they might be and vary materially as regards amount of work on hand. Some are still quite busy, while others are actively looking for new business. In some cases, it is reported, a slight concession is made in price if necessary to capture the work. Deliveries generally have improved.

Prices are nominally unchanged; cost of manufacture has receded but little if any, but some cutting of quoted figures is being done, it is said, if it is required to secure the

business. Buyers are contending for lower figures, and it is difficult to say how long the present prices can stand in view of increased stocks and decreased sales.

J. K. Petty & Co., whose boiler manufacturing plant at Lebanon, Pa., was recently badly damaged by fire, advise us that they have let contracts for new buildings to be erected on the site of those destroyed. Part of the plant which was not badly damaged has been temporarily repaired and is being used for regular work, orders for which are being taken as usual. A considerable part of the machinery and tools in the buildings will have to be replaced; some, however, will be repaired and made to serve their purpose temporarily. The new building and equipment are to be of the best modern design.

The Midvale Steel Company, who have, as previously announced in *The Iron Age*, been awarded the contract for 6180 tons of armor plate for the United States battle ships "Idaho" and "Mississippi," will at an early date begin the erection of an armor plate plant for the manufacture of this material. Plans by the engineers of the company are practically completed, both for buildings, which will be of structural steel and corrugated iron, and for the equipment, the total cost of which is estimated at over \$2,500,000. It is expected to push the erection of the plant to completion on the earliest possible date.

Lovegrove & Co., Incorporated, have recently shipped for export to a woolen mill in China a 150 horse-power boiler and a 100 horse-power engine, together with all the necessary supplies—belting, pipe fittings, tools and everything needed for the erection as per plans and specifications, which were furnished. Lovegrove & Co., Incorporated, have also recently been appointed representatives for this territory of the Knowlson & Kelly Company, manufacturers of high grade Corliss engines, Troy, N. Y., and the Ironton Engine Company, manufacturing high and medium speed engines, Ironton, Ohio.

The Hess Machine Works continue busy; there is a fair demand for file making machinery, particularly for export, and several sets of machines have been exported recently to Germany and to England. Two sets of their latest type machines have also been shipped to parties in Russia.

I. H. Johnson, Jr., & Co., Incorporated, are about ready to bring out several new tools which will be of interest to the trade. A new type of a double axle lathe has been placed on the market, and a constant speed motor driven lathe, with mechanical speed change, will be ready for the trade at an early date. These parties recently received orders from the Canadian Pacific Railway Company for four of their standard belt lathes, and have taken other orders for several large lathes. Recent shipments of tools by them include a car axle lathe, taking in axles up to 3½ inches diameter, for the Hockensmith Wheel & Mine Car Company, Irwin, Pa.; a 66-inch swing lathe, with 26-foot bed, a duplicate of one furnished the Camden Iron Works, plant of R. D. Wood & Co., has been shipped to the same parties' Florence, N. J., plant. A number of smaller lathes, three of which were 25-inch swing, have also been shipped various parties.

The Philadelphia Roll & Machine Company are very busy in all departments. The demand for sand and chilled rolls, rolling mill equipment and large charcoal iron air furnace castings continues, and a number of satisfactory orders have been booked. The amount of metal melted for charcoal iron castings during October by them has again exceeded 1,000,000 pounds. Considerable machinery on order is in course of erection, including a large heavy plate shear. Deliveries on rolls, both chilled and sand, have been made recently to many of the large steel and iron mills.

The Eynon-Evans Mfg. Company have a number of steam jet blowers for gas producers about ready for delivery, and advise us that a fair run of new business continues to come in. Their foundry has considerable work on hand, including a number of acid resisting bronze castings. The installation of new tools, cranes, &c., in the new addition to their plant have been completed, and with the added facilities they are now in a position to turn out work even more promptly than heretofore.

Dienelt & Eisenhardt continue fairly busy. The foundry has a large amount of work on hand for shipbuilding concerns, and is being operated to its best capacity. Orders for oil cloth printing machinery, hydraulic jacks and other machinery are sufficient to keep their machine shops running regularly. Deliveries of jacks as well as other machinery are constantly being made to various parties, both local and out of town.

The Philadelphia Pneumatic Tool Company are busy. October being the best in volume of new business in the last three months. A larger part of the new business comes from various railroad companies, boiler making plants taking probably the next largest share. Export demand at present is weak, as are also the shipbuilding and foundry requirements. Among recent orders may be mentioned a number of tools, including chippers, riveters and reamers, for the Atlantic Refining Company, Point Breeze, Philadelphia. Deliveries include small shipments for export. A quantity of tools covering their general lines have been

shipped to California parties, and numerous deliveries for Eastern and nearby trade have been made.

The Falkenau-Sinclair Machine Company are receiving a fair amount of new business. Inquiries during the last half of the month improved considerably, and bids have been made on some good sized orders. Business during the month has been largely in the line of standard presses, several of which, including two No. 3 machines, have been shipped New York parties. A number of molds for cement testing have been shipped the city of St. Louis, Mo., and several testing machines are nearly ready for delivery to other parties. A Taylor tool grinder has been shipped the Bethlehem Steel Company, and several presses have been furnished local parties.

H. B. Underwood & Co. continue fairly busy, the demand for railway shop tools keeps good, and a number of portable railway repair tools have been shipped various domestic and foreign railway companies. A large portable milling machine has also been shipped to Pittsburgh, Pa., parties.

The American Pulley Company find no increase in demand for pulleys over that of last month; purchasers, both foreign and domestic, continue ordering in small quantities, sufficient to meet their immediate demands only. Regular shipments continue to be made to the Middle and Far West, and also to England and Australia, but in most cases deliveries are made in smaller quantities than heretofore.

The Link-Belt Engineering Company have taken on considerable new business, among which was an order for a large quantity of elevating and conveying machinery of the apron conveyor type for export to Buenos Ayres, Brazil. The Link-Belt Engineering Company continue busy in all departments, and have a large amount of work on their books. Inquiries for new business have, however, fallen off slightly. They are actively engaged in completing the erection of several coal storage plants, and shipments on account of general orders have been numerous.

The Alfred Box Company are still busy; inquiry for cranes is fair and some nice business has been taken, some recent orders including one 5-ton, two 10-ton, two 20-ton and one 30-ton electric traveling cranes for the new plant of the Delaware River Steel Casting Company, Chester, Pa. A 20-ton hand power traveling crane has been ordered by the Altoona & Logan Valley Electric Railway Company for their Altoona shops. A 25-ton hand power traveling crane will be installed in the North Jersey Street Railway Company power station at Newark, N. J., and a 10-ton crane of similar type will be built for the Jersey City, Hoboken & Paterson Street Railway Company, Hoboken, N. J. Several cranes have been delivered to various parties and are ready for erection, one of which is a 3-ton three-motor traveling crane for the Eynon-Evans Mfg. Company of this city.

The Energy Elevator Company continue busy, there being a good demand for elevators, particularly of the freight and carriage type. Among others recently installed were six elevators in the Franciscan Convent at Glen Riddle, Pa. A hotel lift has been installed at Pittston, Pa., and others have been shipped to Fond du Lac, Mich.; Cornwall, N. Y.; Parkdale, N. J.; Worthington, Ind.; Jeffersonville, Ind., and Hautsport, Nova Scotia. A large number of freight and other lifts have also been installed for local parties.

The Baldwin Locomotive Works keep extremely busy in all departments and have a large amount of work on their books, sufficient to keep them running at full capacity well into next year. Among some recent export orders received were eight engines for export to Corea, three for Brazil, two for Chili, several for Japan, and ten for various railroads and individual concerns in Cuba, many of which are duplicate orders. There has also been an increase in domestic demand during the latter half of the month. The new Twenty-sixth street shop recently erected is now being fully occupied, and most of the machinery has been put in place. Deliveries during the month have been very large, and a record production is being made. Recent shipments of engines include, among others, deliveries to the Baltimore & Ohio, Chicago & Northwestern, Pennsylvania, Seaboard Air Line, Chicago, Milwaukee & St. Paul and other railroads.

The Tabor Mfg. Company, manufacturers of molding machines, Philadelphia, Pa., have received orders for additional molding machines from the British Westinghouse Company for export. They have also received orders from Fenwick, Freres, for two machines, one of split pattern type, 16½ x 21 inches, the other of vibrator frame type, for exhibit at the French Automobile Exposition in Paris. These machines will be fitted with patterns to illustrate the latest American method of machine molding. The Tabor Company advise us that business conditions are on the whole satisfactory, orders during October being fully up to the previous month. Some recent deliveries of molding machines made by them include five standard type split pattern machines for the Philadelphia Steel & Iron Company, a local concern, and four Draper-Tabor hand ramming, stripping plate, split pattern machines have been shipped the Sturtevant Blower Company, Boston, Mass. A special machine

for molding steel trolley gears has also been delivered the General Electric Company for their Lynn, Mass., shop.

Chicago Machinery Market.

CHICAGO, ILL., November 2, 1903.

The Western trade in metal working machinery shares the dullness of the iron and steel industry. Proprietors of machinery using plants seem disposed to make their present equipments answer their purpose until the industrial situation shall be a little more clearly defined. Many new plants proposed are still on paper, the difficulty of securing capital on favorable terms preventing the consummation of plans. There is a fair activity in hoisting machinery for mines and for machinery such as is used in the lumber industries. Machines for cement works are in active demand, owing to the fact that the cement industry is now booming in the West.

In the reports that follow the sales of smaller machines and tools have been eliminated, not being of sufficient importance for publication.

Stiles-Morse Company, Chicago, advise that as distributors for Chicago and the West of sheet metal working machinery they find business improving recently, as they are receiving a great many inquiries from parties desiring to put up independent factories for manufacturing cans, particularly fruit cans. The company are making a specialty of equipping fruit can plants entire, and turning them over to customers in running order with a guaranteed production per day. At the present time they are equipping three plants in this manner.

The Ransom Mfg. Company, Oshkosh, Wis., have made a number of sales of motor driven grinders to the various navy yards and steel plants during the past month. They report a large and active business in their disk grinders.

The Whitehead Machinery Company, Davenport, Iowa, report among other sales during the past month the following: Sparta Gas & Electric Company, Sparta, Ill., one 100 horse-power four-valve automatic engine; Great Northern Excelsior Mfg. Company, Park Falls, Wis., two 125 horse-power tubular boilers; Louisiana Cypress Lumber Company, New Orleans, La., 22 x 36 throttling slide valve engine; Kenosha Gas & Electric Company, Kenosha, Wis., 75-kw. alternating generator direct connected to four-valve automatic engine; Carver Milling Company, Carver, Minn., one 75 horse-power tubular boiler; East St. Louis & Suburban Electric Railway Company, East St. Louis, Ill., 16 x 24 American type locomotive; Gilbert Paper Company, Menasha, Wis., 10 x 16 automatic engine; Central Minnesota Power & Mill Company, Sauk Center, Minn., one 150-kw. alternating generator; Hummer Mill Company, Iowa City, Iowa, 15¼ x 24 Buckeye engine.

The Stephens-Adamson Mfg. Company, Aurora, Ill., say that the most important contract they have taken during the past month is that of the complete elevating and conveying machinery equipment for the additions being made to the plant of the Jos. Schlitz Brewing Company of Milwaukee, Wis. This contract calls for belt conveyors, bucket elevators, shafting, rope transmission, friction clutches, &c.

The Nordberg Mfg. Company, Milwaukee, Wis., report that the month of October has proved a decided improvement over the two preceding months in the matter of orders placed, and the outlook is altogether better.

The Aetna Foundry & Machine Company, Springfield, Ill., report orders for shipment to S. H. Wolfman Coal Company, Huntington, Ind.; Sangamon Coal Company, Springfield, Ill.; Kennon Coal & Mfg. Company, Roseville, Ohio, and Busseron Coal Company, Mildred, Ind.

The Fox Machine Company, Grand Rapids, Mich., have just delivered one of their large milling machines to the Pennsylvania Railway Company.

The American Machinery Company, Grand Rapids, Mich., report that while trade for October was in the aggregate considerably more than for the same month last year, and almost double that for September of this year, it has been largely due to small buyers and for less expensive machines. Among the important orders are: Oliver universal saw bench for the Bellamy Planing Mill, Florence, Ala.; Oliver hand jointer, saw bench and No. 3 trimmer for the Boston Electric Spinning Company, Bedford, Mass.; Oliver hand jointer and saw bench for the Western Ohio Railway, Wapakoneta; Oliver saw bench for the Rogers Lbr. Company, Warren, Pa.; Oliver saw bench, band saw and No. 3 trimmer for the Gustafson Mfg. Company, Chattanooga, Tenn.; Oliver saw bench for the Smithsonian Institute and National Museum, Washington, D. C.; No. 3 Oliver wood trimmer for the A. C. Thompson Company, North Sydney, Nova Scotia; No. 3 wood trimmer for the Pittsburgh & Lake Erie Railway, McKee's Rocks; one No. 3 and two No. 1 Oliver wood trimmers for the Howard Iron Works, Buffalo; one No. 3 Oliver wood trimmer for the J. G. Duke Machine Works, Memphis, Tenn.; No. 3 wood trimmer for the Pratt & Cady Mfg. Company, Hartford, Conn., and an unusually large number of bench trimmers distributed throughout the United States and Canada.

The Weber Gas & Gasoline Engine Company, Kansas

City, Mo., mention the following installations of engines during the last 30 days: Wm. Page, Bloomington, Kan.; University Broom Company, Muskogee, I. T.; Krakauer, Zork & Moye, El Paso, Texas; Bathgate Bros., Polo, Mo.; Sligo Iron Store Company, St. Louis, Mo.; Moses Bros. Mill & Elevator Company, Great Bend, Kan.; Rowe & Harrison, Early, Iowa; F. W. Palis, Shreveport, La.; Barr Hardware Company, Greenville, S. C.; Lunt, Moss & Co., Boston, Mass.; L. M. Teale, Kingman, Ariz.; Valensuella Copper Company, Mohawh Summit, Ariz.; A. J. Meyer, Longtown, Mo.; J. E. Beatty, Kahoxa, Mo.; Aug. Zellner, Orient, S. D.; Bowen & Brown, Broken Arrow, I. T.; American Export & Machinery Company, New York City; W. P. Everingim, North Loup, Neb.; C. V. Linguist, Morganville, Kan.; Steil Bros., Emmetsburg, Iowa; W. H. Frey, Stephenville, Texas; W. S. Rand, Wabauunsee, Kan.; King Mfg. Company, Effingham, Kan.; John Klein, Clay Center, Kan.; Hiram Seegrist, Lenexa, Kan.; J. N. Simpson, Ridgeway, Mo.; G. H. Casebolt, Ridgeway, Mo.; L. Fredrich, Leonardville, Kan.; Geo. S. Scantlin, Pratt, Kan.; Thos. M. Wright, Muskogee, I. T.; Jere Kimmel, Robinson, Kan.; Bethany Hardware Company, Bethany, Mo.; Agency Boarding School, Sisseton, S. D.; D. J. Mahoney, Springfield, Ill.; Oscar Purdy, Gambier, Ohio; Northwestern Coal Mining Company, Bevier, Mo.; J. R. Abbott, Gurdon, Ark.; R. W. Hilliker, Kansas City, Kan.; V. A. Moore, Rocky Ford, Col.; J. K. Overgaard, Ventura, Iowa; California Hydraulic Engine Company, San Francisco, Cal.; Nelson Bros., Hutchinson, Kan.; S. A. Clark, Bosworth, Mo.; Mannon Sons & Petty, Mendota, Mo.; New Mexico Developing Company, Bisbee, Ariz.; Marburg & Leuders, Hermosillo, Mexico. Particular attention is called to the installation of the Weber charcoal gas producer and engine for Marburg & Leuders of Hermosillo, Mexico, for the operation of their woolen factory. This engine is developing power at a cost of 12 cents, Mexican currency, per horse-power hour, and is operating on charcoal. Another installation was two 26 horse-power hoists for the New Mexico Developing Company at Bisbee, Ariz. These hoists were sectionalized to 175 pounds limit, which was a very difficult task on this size machinery.

The Wilmarth & Mormon Company, Grand Rapids, Mich., find quite a shrinkage in shipments for October of this year, as compared with the corresponding month of 1902. Among recent shipments of drill grinders which they have made are the following: Gardner Machine Works, Gardner, Mass.; United States Navy Yard, Pensacola, Fla.; Klotz Machine Company, Sandusky, Ohio; Francis Meisel, Boston, Mass.; Scovill Mfg. Company, Waterbury, Conn.; J. G. Brill Company, Philadelphia, Pa.; Waltham Machine Works, Waltham, Mass.; Indianapolis Drop Forging Company, Indianapolis, Ind.; Union Iron Works, Bangor, Maine; York Silk Mfg. Company, York, Pa.; Knight Mfg. Company, Canton, Ohio; Coe Brass Mfg. Company, Torrington, Conn.; Russell, Birdsall & Ward B. & N. Company, Port Chester, N. Y.; Imperial Pneumatic Tool Company, Sherbrooke, Ont.; Fischer & Risley, Wayne Junction, Pa.; St. Paul Machine Company, St. Paul, Minn.; Allentown Foundry & Machine Company, Allentown, Pa.; Muskegon Cutlery Company, Muskegon, Mich.; Draper Mfg. Company, Port Huron, Mich.; nine machines to England and one to South America.

The Holthoff Machinery Company, Cudahy, Wis., are erecting an extension to their boiler and sheet metal shop, 137 x 192 feet, making the shop practically 350 feet long. Installations will be made of such new tools and appliances as are necessary to make the shop complete in all its details, giving every facility for turning out work of all kinds in this line promptly. It is expected that this extension will be completed about January 1 next. The company are also building a new foundry, 112 x 200 feet, which is being so constructed as to permit of its being extended 250 feet additional. This foundry will be equipped with all modern appliances, and unless present plans fail should be ready for operation March 1. Plans are also being prepared for the immediate extension of the present machine shop. The contemplated improvement will be 110 x 250 feet, making the machine shop 110 x 500 feet. This shop will also be equipped with the latest improved machinery for all kinds of light and heavy machine work. Later on it is the purpose to add to this shop a building for erecting, 75 x 350 feet. The company are also making plans for the installation of a new gas and power plant, using the Loomis-Pettibone gas power system and the Crossley gas engines. All improvements are expected to be completed by the middle of the coming year.

Thomas Anderson, formerly superintendent of the plant of the Youngstown Car Mfg. Company, Youngstown, Ohio, died at his residence in that city last week. Mr. Anderson was 59 years of age, and was well known among railroad men, having been connected with various railroads nearly all his life. He originally entered the car department of the Lafayette & Indianapolis Railroad in 1860.

The New York Machinery Market.

NEW YORK, November 4, 1903.

If any effect is to be felt in the business situation from the elections of yesterday, it cannot be otherwise than favorable. With the exception of the recapturing of New York City by Tammany, which was purely a local issue, no changes of importance are to be noted in any section of the country. This may be taken as indicating an absence of any spirit of unrest which might have been feared prior to the political contests. The outcome of yesterday's work was looked to with considerable interest in the machinery trade, as it promised to furnish some insight into the general feeling throughout the country, and anything of this nature is received most eagerly at present. There was a hope in the trade that if the election should pass off without any serious disturbance, an improvement in business should follow. If this hope was well founded it ought to be fulfilled. It is still a matter for the future to determine, however.

There is certainly considerable room for improvement in the machinery, and particularly the machine tool, trade. As is natural, the latter branch of industry is always first to feel the effects of a change, either up or down. So, in the present quieting down of business, the machine tool trade received the full effect of it immediately.

In these days of rapid production the first thing to contend with under these conditions was the fear of overproduction. This has been met in a large measure, as machine tool builders have not hesitated to cut down both the number of working hours and men. One builder of radial drills in the Middle West closed down entirely. To accelerate this movement one large Western machinery house canceled a large number of orders, which were being put through for stock. In one city these cancellations are said to aggregate about \$40,000. Of course, this emphasized the builders' or manufacturers' determination to curtail their production.

Now the phase of greatest interest is the price question. Through the National Machine Tool Builders' Association values have been pretty well maintained on standard lines of late. As the association is to meet at the Hoffman House, New York, on Tuesday and Wednesday of next week, this subject is deferred until that time. The majority of the members are in favor of maintaining existing values, claiming that they will not be enabled to sell more tools at reduced prices than they are selling at present. Furthermore, they claim that a reduction will simply unsettle things and add to the general downward tendency. A strong effort will be made to establish this position and cause it to prevail. Nevertheless, it is a difficult matter to maintain agreements looking to the upholding of prices on a declining market and when business is so scarce that it must be sought along most aggressive lines, and a minority taking this view and adhering to it may bring about a condition in the machine tool trade which will have its only advantage for the purchaser. It is understood that President Joseph Flathers will present a paper on "Doing Business on a Falling Market," which should prove of greatest interest. Throughout the machine tool trade the opinion finds expression that the association will be confronted by a situation which will have to be handled with the greatest of calmness and utmost sagacity. It is said that the choosing of another president will evolve upon the members at their meeting next week, as President Flathers has made it known among his friends and associates that he will not permit his name to be used for the coming term. A paper which will be received with great interest will be presented by William Lodge, on the topic of "High Speed Steels," a subject to which Mr. Lodge has devoted much attention and on which he is considered one of the best authorities in this country.

In the general business of the week no new developments are to be noted. Demand was light, orders being of small size. Machinery merchants have large stocks on hand.

Preparatory to the execution of the plans for the vast improvements to the lines they control, the Pennsylvania Railroad have ordered the issue of bonds to the amount of \$20,000,000 by two subsidiary railroads—\$10,000,000 by the Long Island Railroad and \$10,000,000 by the Philadelphia, Baltimore & Washington Railroad. Of the former but little is known as to what will actually be done in the way of purchases of new equipment, outside of that for the large power plant already outlined. As the Long Island road will operate a good part of their line by electricity as soon as the tunnel is completed, and as the present train service is to be greatly extended, it is safe to presume that either the present shops will have to be enlarged or new shops built to take care of the repairs for the great increase in rolling stock. A portion of the bonds to be issued by the Philadelphia, Baltimore & Washington Company is to be used for the construction of the Union Station at Washington, mention of which was made in these columns last week. The remainder is to be used for general improvements. These, according to a recent statement of a director of the company, will include new machine shops and roundhouse, and double track bridge across the Susquehanna River. In connection with the shops which the Pennsylvania Railroad

Company have under construction and which have been followed very closely by machine tool builders, we can state that the officials of the company are now at work on the specifications for the mechanical equipment.

Estimates are being received by the Midvale Steel Company of Philadelphia, Pa., for the construction of the building to be used for the manufacture of armor plate for battleships. The building will be located close to the forge shop at the works at Nicetown Station. It will be of structural steel construction, with sides of corrugated iron and foundations of concrete, brick and stone. The dimensions will be 197 x 336 feet. The building will be of various heights, the main portion having a span 70 feet wide and 96 feet high. The other portions will have a 38-foot wide span 40 feet high, and a 60-foot span also 40 feet high. A portion of the equipment will consist of runways for three 150-ton electric cranes, two of 75 tons and one of 20 tons. Estimates for the work of erection will be opened on November 9. It is estimated that it will take 15 months to erect the building. The cost, including the installation of all the necessary equipment, will be about \$2,000,000.

With the exception of one or two tools which they have already purchased, the Skinner Engine Company, Erie, Pa., have not yet decided just what new tools they will purchase for their new addition. The building will be 50 x 175 feet, and will be used to increase their facilities for handling their product. A traveling crane will extend the entire length of the building.

The Hilles & Jones Company, machine builders, Wilmington, Del., have secured property adjoining their plant upon which they will erect new foundry buildings early next year. Contracts have been placed for a foundry building 120 x 200 feet and some smaller buildings, the steel work for which will be furnished by the American Bridge Company. The sides and ends will be glass and metal framing above 14 feet of brick work, and the roof will be of concrete. The charging floor will be 40 x 160 feet, and will be of heavy construction for the storage of pig iron. Modern equipment will be installed, including four Shaw cranes, one each of 40, 20, 10 and 5 tons capacity.

New machinery is required by the Champion Drill Company, Avon, N. Y., to replace that lost in the fire which recently destroyed their plant. They inform us that they will not need a large amount in any one line, and that they have not as yet made any purchases. It is their intention to erect temporary buildings for immediate use, and it is probable that a substantial plant will be built later on. The company manufacture Champion grain and fertilizer drills.

Some new machinery, including punches, shears, drills, traveling cranes, cupola, elevator and scales, are required by the Dornfeld-Kunert Company, Watertown, Wis., for their new shops, contracts for the construction of which will be let in about two weeks. There will be a new foundry, 40 x 150 feet, with core room, 28 x 56 feet; coke and sand room, 50 x 56 feet; cupola room, 24 x 36 feet; construction shop, 40 x 156 feet, and pattern shop, 40 x 56 feet. All of the buildings will be constructed of brick and steel, and will be one story with the exception of the pattern shop, which will be two stories. To provide for these improvements and to extend the business, the company recently increased their capital stock from \$50,000 to \$75,000. The name of the company has been changed from the E. Kunert Mfg. Company to the Dornfeld-Kunert Company, but the business will be continued as heretofore—general machine foundry and boiler work. J. F. Dornfeld, 134 Van Buren street, Chicago, who is one of the principal stockholders, is preparing the plans for the new buildings.

The following awards have been made for supplies for the Portsmouth and Boston navy yards, bids for which were opened October 13:

Acme Road Machine Company, Frankfort, N. Y., class 15, one stone and ore crusher, \$912.

Holzer-Cabot Electric Company, Boston, Mass., class 16, six electric motor grinders, \$1058.

Garvin Machine Company, New York, class 17, one heavy pattern upright drill, \$253.

Niles-Bement-Pond Company, New York, class 18, one 20-inch water tool grinder, \$78.

Prentiss Tool & Supply Company, New York, class 19, one 60-inch grate shear, \$2000.

Classes 13, one 35 horse-power electric motor, and 14, two 90 horse-power direct current electric motor, will be purchased in open market.

Proposals were opened at the Bureau of Yards and Docks, Navy Department, October 24, for the construction of a 20-ton crane scow for the Boston Navy Yard, as follows:

Item 1, price for scow according to specifications; 2, amount to be deducted if one ballast and feed tank and the ballast bilge pumps are omitted.

William L. Miller, Boston, Mass., item 1, \$17,345; 2, deduct \$550.

W. H. Ellis, Boston, Mass., item 1, \$15,850; 2, deduct \$700.

Snare & Trieste Company, New York, item 1, \$18,920; 2, deduct \$960.

New Jersey Foundry & Machine Company, Plainfield,

N. J., item 1, \$19,350; time, eight months; 2, deduct \$1350; alternate proposal, deduct \$485.

Smith & Robinson, New York, item 1, \$18,750; 2, deduct \$500.

Class 16, one single motor electric jib crane, of the supplies for the Norfolk and Port Royal navy yards, called for under the opening of October 13, was awarded to Frank N. Etting, Philadelphia, Pa., at his bid of \$565.

The following awards have been made for supplies for the Washington and League Island Navy Yards, bids for which were opened October 13:

Niles-Bement-Pond Company, New York, class 23, three portable electrical driven band drills, \$157; class 24, three portable electrical driven grinders, \$141.

Baltimore Machine Elevator Works, Baltimore, Md., class 19, one standard electric freight elevator, \$2260.

Fairbanks Company, New York, class 21, one water tool grinder, \$64.

Manning, Maxwell & Moore, New York, class 25, three adjustable hollow milling tools, \$70.50.

Class 22, one grindstone dressing machine, will be purchased in open market.

New York.

NEW YORK, November 4, 1903.

Pig Iron.—There has been a considerable amount of inquiry, and a fair amount of tonnage has been placed. Some of the Southern producers are naming very low prices, and in the case of the Virginia furnaces are being aided by lower freights to New England points. Nothing definite was done at the Philadelphia meeting of the Eastern furnace interests, but natural causes are bringing about a considerable reduction in output. We quote Northern No. 1 X Foundry, \$15 to \$16; No. 2 X Foundry, \$14.25 to \$15, and Gray Forge, \$13.75 to \$14.25, tidewater. Basic is quoted \$14 to \$14.25, delivered. Tennessee and Alabama brands are quoted \$14 to \$14.25 for No. 1, \$13.25 to \$13.75 for No. 2 and \$12.75 to \$13.25 for No. 3.

Steel Rails.—Small export orders are being taken, among the recent ones being a lot of about 4000 tons for Japan and about 5000 tons for Corea. A South American order was lost. It is stated that the mills have orders aggregating 727,000 tons on their books for 1904. On the other hand, some are very short for this year, and the transfer of about 60,000 tons from a Western to a Central mill is under consideration. The Rail manufacturers will meet again to-morrow. We continue to quote \$28, at Eastern mill, for Standard Sections.

Cast Iron Pipe.—New York City is quite frequently in the market for small quantities, and the demand from nearby towns is fair, but the weekly volume of business is gradually falling off. The weather is exceptionally favorable for Pipe laying, and this prolongs the autumn trade. Carload lots of 6 to 10 inch are quoted at \$29 per gross ton, at tidewater, and 12-inch upward \$28.

Finished Iron and Steel.—Structural work is quiet, even contemplated improvements being deferred for which all arrangements had been understood to be made. The only business of importance immediately in sight is the Blackwell's Island Bridge, on which bids will be opened on November 5. The persistent talk of lower prices is largely responsible for the indifferent attitude of buyers, as labor troubles are no longer cutting much of a figure. The past week the protracted controversy between the machinists' union and the ship yards was settled and the strike was called off. A better demand for Plates and other finished products is expected from that quarter very shortly. We quote, at tidewater, as follows: Beams, Channels and Zees, 1.75c. to 2c.; Angles, 1.75c. to 2c.; Tees, 1.80c. to 2c.; Bulb Angles and Deck Beams, 1.90c. to 2.85c. Sheared Plates, in carload lots, are 1.78c. to 1.85c. for Tank, 2c. to 2.10c. for Flange, 2.10c. to 2.20c. for Marine and 2.25c. upward for Fire Box. Refined Bars are 1.50c. to 1.70c.; Soft Steel Bars, 1.70c. to 1.80c.

Old Material.—It would almost seem impossible to report a worse condition of business than has recently prevailed in this branch of trade, but dealers state that affairs during the past week have reached such a stage. The demand has almost wholly ceased, and offers of material at very low prices evoke practically no response. Quotations are nominal, with approximate figures as follows per gross ton, New York and vicinity:

Old Iron Rails.....	\$16.50 to \$17.50
Old Steel Rails, long lengths.....	15.00 to 16.00
Old Steel Rails, short pieces.....	11.00 to 12.00
Relaying Rails, heavy sections.....	19.00 to 20.00
Old Car Wheels.....	15.00 to 16.00
Old Iron Car Axles.....	17.00 to 18.00
Old Steel Car Axles.....	16.00 to 17.00
Heavy Melting Steel Scrap.....	11.00 to 12.00
No. 1 Railroad Wrought Iron.....	14.00 to 15.00
Iron Track Scrap.....	12.00 to 13.00
Wrought Pipe.....	9.00 to 10.00
Ordinary Light Iron.....	5.00 to 6.00
Cast Borings.....	3.00 to 4.00
Wrought Turnings.....	8.00 to 9.00
No. 1 Machinery Cast.....	11.00 to 12.00
Stove Plate.....	6.00 to 7.00

HARDWARE.

STRENUOUS efforts are being made to secure support for the Parcels Post bill, a project for the establishment of a merchandise post system. The advocates of this bill as represented by the New York Postal Progress League propose to enlarge the limits now imposed upon the carriage of merchandise in the mails so as to admit parcels weighing up to 11 pounds and measuring up to 3½ feet in length, not occupying more than 2 cubic feet of space. It is proposed that the service shall include free delivery and collection from house to house of all parcels handled by the Post Office Department, wherever a wagon or car collection and delivery service is now, or may hereafter be, established. Where there is only a foot service the postman shall not be required to receive or deliver any parcel of a greater weight than 5 pounds. The rates are to be as follows: On parcels up to 3 ounces, 1 cent; on parcels over 3 ounces and up to 6 ounces, 2 cents; on parcels over 6 up to 9 ounces, 3 cents; on parcels over 9 up to 12 ounces, 4 cents; on parcels over 12 ounces up to 1 pound, 5 cents, and on larger parcels, for each additional pound or fraction thereof, 2 cents, making the rate on an 11-pound parcel 25 cents.

The promoters of this movement lay special stress on the claim that the express companies' charges are unreasonable, maintaining that the best way to guard against such extortion is to extend the service of the merchandise post and thus secure a reduction of rates. This proposition, however, is one which will hardly bear investigation. The advanced charges made by the express companies may perhaps be larger than the circumstances warrant. The proposal, however, that the United States Government interfere in this matter is confronted by the fact that the Post Office Department is not at present self sustaining. Even now every year a deficiency in the postal revenue must be met out of the general funds of the United States Treasury. The low postal rates which are proposed on merchandise, uniform throughout the United States, would certainly not cover the cost of collecting, carrying and delivering such merchandise, and a greatly increased deficit would have to be borne by the Government. The Government should not render service of this character at less than cost. The scheme advocated by those favoring a merchandise post is not a good business proposition, and must strike intelligent men as contrary to the principles which should be followed by the Government.

The express companies will doubtless recognize before long that their interests lie in the direction of making as low rates as possible and rendering it to the interest of the public to make most liberal use of their facilities, thus insuring a volume of business compared to which their present business would seem insignificant. The development of competition, too, may be relied upon ultimately to bring down exorbitant charges. If this should fail other means would doubtless be found without committing the Government to a course vicious in principle and sure to be injurious in operation.

We approach the subject, however, not at all in the interest of the express companies, nor in support merely of abstract principles of government, but in view mainly of the fact that a great injury would be done to a very important class of tradesmen if the proposition to establish a Parcels Post system should be carried through. Every retail merchant in localities at some distance from large cities would find his business materially diminished on account of the greater facilities offered to catalogue

houses to reach the consumer. The retail trade in rural districts are already feeling seriously the effects of this competition. If their trade is being injured under present conditions it would certainly suffer very much more by the reduction in rates of carriage which would result from the Parcels Post system.

There is no crying necessity for such a disturbance of existing conditions as the proposed enlarged merchandise postal service would bring about. While the agitation has arisen partly from a mistaken sentiment among some good people that the Government should do more for the public, it has been mainly from such directly interested parties as catalogue houses and others transacting a mail order business. Against these interests are arrayed the interests of thousands of retail dealers in every section of the country.

The claims of the Parcels Post are to be presented before the convention of the American Hardware Manufacturers' Association at Atlantic City. There is no harm in having so intelligent and influential a body listen to what is to be said in its favor. The result is not unlikely to be a resolution in opposition to the scheme. There is certainly little danger that the gathering at Atlantic City will look with favor upon the proposed revolution in postal matters. The jobbers realize perfectly that it would be immediately detrimental to the interests of the retail trade and ultimately detrimental to their own. They have intelligently and consistently done what they could to discourage the work of catalogue houses and are not likely in this matter to go back at once upon their record and their interests. It is safe to say that a motion in favor of the Parcels Post would be voted down by them with substantial unanimity. The manufacturers, too, may be relied upon to take a broad and sensible view of the subject and to act judiciously in a matter which affects so nearly the interests of the trade throughout the country. It is safe to say that the Parcels Post bill will find few advocates at the Atlantic City conventions.

Condition of Trade.

The fact of commanding interest in the Hardware field this week is the announcement of the termination of the combination on Shovels and Spades, to which reference is made in another column. There is thus thrown open a line in which the trade are especially interested. While some lower prices are likely to develop on some of the goods this will not be an important matter, as prices are already quite low on the lines most largely handled. There continues to be a revising of quotations on many goods in the Hardware field, but on the whole the market is well sustained. The substantial reduction in the price of Cut Nails is, however, noticeable and will meet the general approval of the trade, as the action taken will tend to keep prices stable at the new level and encourage the placing of such orders as the current or early requirements of merchants may demand. The reports from October trade are on the whole quite satisfactory. The weather fortunately contributed greatly to the welfare of the agricultural classes, and after all the uncertainty and anxiety in regard to the crops it is a matter for congratulation that they are now conceded to be abundant and sure to command good prices. Current business indicates a disposition on the part of jobbers and manufacturers to move conservatively, but at the same time shows a good degree of confidence in the future of trade. Cold weather goods naturally are having a prominent place in current purchases. Mechanics' Tools are in fair demand, notwithstanding the questionable outlook in some localities on account of the attitude of labor. There are fortunately

thousands of smaller places where this malign influence is not a menace to trade and where things move along in a regular and prosperous course. Orders for specialties and the finer goods, many of which are outside the regular Hardware line, reflect the preparations which are being made for holiday trade. It is evident that there is a constant tendency on the part of Hardware merchants to make their stores the source of supply for many articles of the finer grade and more in the line of luxuries than the great body of their stock. Among these household appliances and utensils have a leading place. By pursuing this course such merchants give evidence of enterprise, increase the assortment of wares from which profit can be derived, and add to the attractiveness of their establishments. The change which is thus gradually taking place is a noticeable one and full of promise.

Chicago.

(By Telegraph.)

Manufacturers and wholesalers catering to the wants of the retail trade are kept busy filling orders at prices that leave an adequate margin of profit. Builders' Hardware is fairly active, both in the high grade specialties for modern office buildings, and in the cheaper grades of Hardware for homes. Shelf Hardware shares in the activity, though in some lines the margin of profit is not so great as it should be. Both Wire and Cut Nails are selling freely at the regular association prices. Wire has made a good October record and November's business opens satisfactory for the season.

St. Louis.

(By Telegraph.)

The distribution of Hardware continues along satisfactory lines, and the figures representing the sales by the jobbers for the month just closed make a very gratifying showing, especially so in the face of the unsettled conditions in some departments of the business of the country. The curtailment of building in both local and outside territory, due to high costs of construction, has considerably cut the demand for lines of Builders' Hardware, but withal, the movement of this class of goods has been of a high order. Among the specialties goods suitable for the forthcoming holiday trade come in for activity, and Skates, Sleds, Toys, Pocket and Table Cutlery do not rest long on the jobbers' shelves. Preparations for the spring demands are being actively pushed and some early requirements of the dealers in Lawn Mowers, Refrigerators, Wire Cloth, &c., have been attended to.

Cleveland.

THE W. BINGHAM COMPANY.—The Hardware business in this section is very good. Orders from road salesmen, also by mail, are coming to us in good volume and the year's business is going to round up, we believe, with good, substantial results. The Cleveland Hardware jobbers carry such a large and varied line of Hardware, mining, milling, manufacturing, gas and steam fitters' supplies that we do not feel a depression in business as much as some other sections where the lines of Hardware are not carried to such a varied extent as here.

Some newspapers speak of the partial or entire closing down of some factories in some sections of the country, and we take it to mean that many of them have been run at such a high speed and long hours that they need repairing; also, perhaps on account of labor troubles manufacturers want to know where they stand.

There is a large demand at this time of the year for Heating Stoves—that is, in the oil and natural gas lines, especially as the natural gas in this section has recently been greatly developed, and our trade in malleable and cast fittings, valves, &c., for equipping plants and private houses for the use of natural gas, brings to us a very large trade—so much so that the manufacturers of fittings are far behind on their orders, and it makes it difficult to supply promptly some sizes and kinds of fittings. We are giving our customers as prompt service as any one can under existing conditions, as we make it a point to urge

our manufacturing friends in this line of goods to supply us as promptly as possible.

The real estate men in Cleveland and the surrounding district report an active business. They say that many speculators are turning to Cleveland real estate for investments on account of the great demand for renting property, which is becoming scarce, and its scarcity has forced many tenants to become home buyers, and consequently the value of Cleveland real estate has advanced so that it is now more like what it should be as compared with other cities of like population and resources. This development in homes is, of course, having its effect on the demand for Hardware for house trimmings, and as building contractors follow the farmer's policy of making hay while the sun shines, the buildings throughout our city have been advanced as rapidly as possible during October.

On the whole the Hardware business in this section is quite satisfactory. What is true of the demand in Cleveland is equally true of the zone from which Cleveland draws its trade, which is very wide.

St. Paul.

FARWELL, OZMUN, KIRK & Co.—October has closed in good shape. It is seldom that the Northwest has seen an October so favorable for farm work, and especially when so much needed to save the crop as it was this year, owing to the unusually unfavorable weather in September.

These weeks of sunshine have been golden indeed in a literal sense, and have saved the crops. Farmers are also doing a large amount of fall plowing, which is essential to a satisfactory seeding next spring.

At this writing we are enjoying a spell of genuine Indian summer, and it is a delight to be out of doors.

The conditions of trade here now indicate a fair business for the balance of the year and also a continuance of same well into the new year. There is certainly nothing now to be seen in the local conditions that could lead to any other conclusion.

The Northwest is in a healthy state. It is to be expected that in so large a territory and having so many diversified interests there will always be something "out of joint." Just now it is the shutdown of the Amalgamated Copper Company works, which throws out of employment many thousands of employees and entails very heavy losses on all interests that are closely identified with the prosperity of Montana. Thus far all efforts to restore peace have failed, and the probability is that the shutdown will last for some time, and if so large communities will seriously suffer.

Upon the whole, however, conditions are favorable and business is now and promises to continue for some time to be satisfactory. Retail merchants are carrying fair stocks and are buying freely for actual wants. Collections are fair and will probably continue so for some time.

Our business men are strongly in favor of reciprocity with Canada on a fair basis and hope that active efforts toward securing it may not be much delayed by the temporary soreness of our Canadian friends over the award in the Alaska boundary case. The Northwest will be strong and insistent in its attitude toward reciprocity with Canada when the time comes for action.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—Trade since our last letter to *The Iron Age* has continued without any material change, although whatever changes may have occurred during that time we feel may be put down as an improvement over the preceding two weeks. The weather has probably had something to do with it, it having been cold until the last few days. During the cold spell of a couple of weeks, however, many orders for season goods for winter use were booked.

There is, however, a continued fear pervading trade of injudicious acts by some of the industrial employees, or workmen, which is causing considerable anxiety, knowing full well what the results of any unwise course must certainly be. The strikes of various organizations of builders throughout our large Eastern cities have been the cause of orders being canceled and have been the indirect cause of the overproduction of pig iron beyond the pres-

ent demand, which has thrown hundreds of men out of employment, consequently it is but natural that purchases of iron and steel are restricted to present wants instead of being ordered months in advance, as has been the case the last few years. Notwithstanding this some of the Hardware trade anticipate a strong revival of trade in 1904, although others look for a disturbed trade, and unless the various impending strikes are settled and suspended operations are resumed it must have a serious effect. Of course we have one important factor as a reason for continued good trade during the early months of 1904—that is, the agricultural products throughout the country promise a large amount of money when the goods are marketed, and beyond this there is everything encouraging in the Southern outlook for cotton. In the meantime there is possibly a natural conservatism shown by the manufacturer, the wholesale merchant and the retail trade.

Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—Maryland courts have at this time made a bad precedent in appointing two vice-presidents receivers of the Maryland Trust Company and the Union Trust Company. Bank officers and directors are the parties at fault in getting banks into the hole and should never be trusted with the job of getting them out, but rather be proceeded against in court on account of violation of oath or for neglect of duty.

The outlook in the Pacific Northwest is not as rosy as might be wished for. Producers are not letting go their crops as prices are not satisfactory. Wheat at tidewater is quoted at 74 cents per bushel and freight from Eastern Oregon and Washington is 13 cents, while producers hold for 75 cents at home; too wide a margin to do business on.

The lumber and shingle business, too, is in the dumps, so that many have, and more will, shut down mills and logging camps.

Lowest freights on record prevail from coast ports foreign bound. Ship Subsidy Hanna will now have to subsidize as ships are actually losing money, a condition American builders would not care to meet.

Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—If the market is being demoralized at all, it is because people are determined that it shall be, not from the ordinary operation of natural causes of lack of demand or inability to buy. People seem to have come to the conclusion that it is time for the pendulum to swing back, and that the predictions of Poor Richard's Almanac or of Benner's prophecy have to be realized somewhere and somehow.

Prices in finished material have not gone off to any surprising extent. In fact, if we owe the trust anything it is for holding them down when people were ready to pay almost any figures contained in the multiplication table. There is a good demand for stock, and full assortments are not over easy to find for quick shipment. Just how much tonnage may be booked ahead in the mills we have no means of knowing—no more than we have of knowing the circulation of our daily morning paper, but there are surprising statements by both, and there is comfortable activity everywhere; certainly there is no surplus in the labor market so far.

The advertisements in our own daily papers for "help wanted" far exceed that of "situations wanted." Especially is this true for able bodied males, and the advertisements are not confined to single individuals. Taking for examples at random, there are six called for a clothing factory, two porters for a Paint store, several for tailor shops, three or four as tinners, &c.; two or three bakers, plumbers, plasterers and printers, the only qualification to the last being that he shall be "sober."

While this condition of things lasts we will decline to feel very blue over the situation. It is only when people are seeking work and cannot find it that distress exists. Prices are steady in staple lines, especially those which have already experienced moderate declines. There is no inclination to give away goods. In fact all of those into which labor enters to any extent will have to be maintained or controlled in order that present wages be paid. We believe that the consumption of the country is likely to be continued in very full volume, or else a good crop

means nothing. Witness the movement of ordinary, every day merchandise freight over the railroads. Ask the express companies about their full wagons and receiving rooms.

Locally the State is exercised over the coming election, there having been an unusually active canvass between the present Governor, J. C. W. Beckham (Democrat), and Col. Morris B. Belknap (Republican), of Louisville. By the time this reaches your readers the result will doubtless be known.

Boston.

BIGELOW & DOWSE COMPANY.—There has been a good, steady volume of business this past month. Salesmen's orders, though smaller in quantities, are equal in number with the corresponding month last year. The retailers have placed few carload orders for either Wire or Cut Nails, anticipating the decline which has taken place. The policy seems to be to carry small stocks and depend upon the jobbers. The disturbing factors in Wire Nails in this market, it is reported, have leased their factory, which should eliminate a profitless condition, as it is expected the mill will be employed on other work. It is expected the lower prices will stimulate a healthy demand, as dealers will not look for further declines at present.

Present prices on Bolts, &c., are very low and customers are buying freely. There is still great difficulty in getting goods from many of the factories, which will welcome a less greater volume of orders to enable them to replenish their depleted stocks.

To make up the loss of sales on Builders' Hardware many dealers have added new lines, like Air Tight Heaters and Stoves and Electric Novelties. Cutlery sales are in excess of former years, showing that the proverbial Yankee must do a little whittling while he is ruminating over the future outlook.

Election to-morrow causes no great excitement in this Republican State or Democratic city.

Money is easy at our banks and sterling exchange is weak. Gold imports may soon cause a decline in the loan rates for money. There are no clouds at present hereabouts, either in the business or the financial worlds.

New England expects to send a large delegation to Atlantic City on the 18th.

San Francisco.

PACIFIC HARDWARE & STEEL COMPANY.—While there seems to be more or less distrust in the stability of Hardware prices, it is interesting to observe that business still continues to compare favorably with the volume done at the same time in previous years. We do hear occasionally of possible advances in certain items, but these advances are regarded as insignificant compared to a general possible decline and the serious effect this would have upon the value of stocks on hand. Buyers are, no doubt, alive to the situation, and seem to be exercising a proper caution. This may, in a measure, account for the continued activity in the Hardware trade on this Coast.

Our people have learned first that they can buy goods to as good advantage from the Coast houses as they can from any of our Eastern competitors; and second, that there is much more profit for them in buying small quantities at frequent intervals, relying upon prompt deliveries to keep their stocks well assorted. They have learned that \$1000 worth of goods on their shelves makes more sales than \$10,000 worth in transit. They have learned that there is more profit to be made when goods are sold and promptly replaced than can be offset by trifling savings in costs, increased investment in stock on hand and in transit; increased amount of room necessary to care for larger stocks, and increased amount of expenses occasioned through the necessary care. Our merchants have learned to buy their goods where they can get the best assortment, and more particularly the best deliveries. It is probably this lesson which accounts for the increase in the volume of business done by Pacific Coast jobbers, and the practice will soon teach them that thereby they can accomplish the best results and make the largest profits. That our Eastern and Middle West competitors realize the situation fully is evidenced by the fact that

one of these has already established a branch on this Coast.

Baltimore.

CARLIN & FULTON.—The month of November generally shows a lessening of the activity prevailing in the early fall, as the retail dealers prefer to reduce stocks bought early in the season, and are disposed to limit their purchases to actual requirements. The present month being one of limited demand thereby generally tests the stability of prices, and whatever weaknesses there may be in the market owing to overproduction generally develop about this time. This has certainly been the case for several years with Nails and Wire, which have generally touched their lowest figures in November and rallied again about the first of the year.

The dissolution of the Shovel Association has been announced, but as yet we have heard of no lower prices being made by the former members of the association than were made during its existence. What may develop later remains to be seen. The situation in this line is improved by allowing any house to buy of the cheapest manufacturer without incurring a penalty for doing so in the shape of loss of rebate.

We suppose trade will be up to the normal during the month, though at the beginning of it we have a great deal of political excitement while at the end of the month come the Thanksgiving holidays, all of which have some influence more or less upon the activity of trade.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—Southern Hardware jobbers report business as continuing to be satisfactory in all respects. The recent cold weather in the South has precipitated the movement of winter goods, and a big business is being done in Heating Stoves, Coal Hods, Stove Boards and other things of this kind. Collections are coming in in good shape and the financial situation in the South is good. The crops are being moved rapidly, and there seems to be an ample supply of funds to do it with.

New Orleans.

A. BALDWIN & Co.—Business is very active in this section and still holds up remarkably well, as orders are still flowing in very freely. In some sections of Texas it is dull, but in all other States the crop condition is very fine, and we expect to do an exceptionally large business.

NOTES ON PRICES.

Wire Nails.—Specifications on contracts are being received by the mills in satisfactory volume, while new business is quite active. The market is well maintained, but delivered prices from some mills do not always represent full tariff rates. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carload lots.....	\$2.00
Retailers, carload lots.....	2.05
Retailers, less than carload lots.....	2.15

New York.—The local demand keeps up to about former proportions, which, while not large, is steady. Quotations are as follows: Single carloads, \$2.20; small lots from store, \$2.25 to \$2.30.

Chicago, by Telegraph.—The demand for Wire Nails shows no marked decline. Business is satisfactory in volume, even though it consists of a multitude of small specifications. Sales are being made at \$2.15 to \$2.20 in carload lots, f.o.b. Chicago, the inside price to jobbers and the outside to retailers.

Pittsburgh.—The condition of the Wire Nail trade shows no material change. There is a fairly good demand, but it is mostly for carloads and small lots, buyers continuing the policy of placing orders only for actual wants. To some points of shipment full rates of freight are not always charged. However, the general tone of the market is very firm. We quote \$2 in carloads to jobbers, \$2.05 in carloads to retailers and \$2.15 in small lots, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash

in 10 days. For galvanizing Nails 75 cents per keg is charged and for tinning Nails \$1.50 per keg extra.

Cut Nails.—The cut in price of 25 cents per keg on carloads of steel and iron Nails, f.o.b. Pittsburgh, made by the Cut Nail Association at their meeting on October 29, to take effect November 1, came as a surprise to the trade because of the magnitude of the reduction. The majority of the manufacturers present thought it better, under conditions ruling, to lower the price, not that any change would be apt to increase or reduce the demand, but it was believed, in view of the irregularities which had been more or less pronounced since the October meeting, that a reduction which would be stable would insure a better condition of the market 60 days hence than if former prices were reaffirmed or a smaller reduction was made. The new price also affects Steel and Iron Nails in the Western section of the country, Iron Nails, however, remaining at the same advance over Steel Nails as heretofore. Quotations are as follows: \$1.90, base, in carloads, and \$1.95 in less than carloads, f.o.b. Pittsburgh, plus freight in Tube Rate Book to point of destination; terms, 60 days, less 2 per cent. off in 10 days.

New York.—The reduction in price made by the Cut Nail Association last week has resulted in the following prices at this point: Carloads on dock, \$2.04½; less than carloads on dock, \$2.12½; small lots from store, \$2.20.

Pittsburgh.—At the meeting of the Cut Nail Manufacturers' Association, held on Thursday, October 29, a reduction of 25 cents per keg was made. The official price has been shaded for some little time. Demand is only fair and is mostly for carloads or smaller lots. We quote: Steel Cut Nails, \$1.90, base, in carloads and \$1.95 in less than carloads; Iron Cut Nails, \$2, base, in carloads and \$2.05 in less than carloads, plus freight in Tube Rate Book to point of destination, 60 days, less 2 per cent. off in 10 days.

Barb Wire.—A continuance of demand characterizes the market, which is for moderate quantities. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots.....	\$2.30	\$2.60
Retailers, carload lots.....	2.35	2.65
Retailers, less than carload lots.....	2.45	2.75

Chicago, by Telegraph.—Business is now slower, which must be expected at this season of the year, but prices are maintained without noteworthy exception. Galvanized Wire is selling on the basis of \$2.75 to \$2.80 in carload lots, and Painted at \$2.45 to \$2.50, the outside price being to retailers. For small lots 5 to 10 cents extra is charged. Staples in carload lots sell as follows: Plain, \$2.30 to \$2.35, and Galvanized, \$2.70 to \$2.75, the outside price being to retailers.

Pittsburgh.—The trade is pursuing the policy of placing frequent orders for small lots, rather than make contracts. This class of orders, however, represents a fairly good tonnage and keeps the mills employed to nearly full capacity. To some points delivered prices charged do not always represent full freight rates; otherwise prices are fairly well maintained. We quote as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days: Painted, \$2.30; Galvanized, \$2.60, in carloads to jobbers; Painted, \$2.35; Galvanized, \$2.65, in carloads to retailers; Painted, \$2.45; Galvanized, \$2.75, in small lots to retailers.

Smooth Fence Wire.—Consumption is about up to the usual volume for the season. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....	\$1.90
Retailers, carloads.....	1.95
Less than carloads.....	2.05

The above prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12	12½	13	14	15	16
Annealed.....Base.	\$0.05	.10	.15	.25	.35	.45	.55		
Galvanized...\$0.30	.35	.40	.45	.55	.65	1.05	1.15		

Chicago, by Telegraph.—Manufacturers of Fencing and other goods requiring Smooth Wire are evidently run-

ning their plants up to or nearly up to their capacity, as the demand is steady and healthy. The market remains steady in tone without change in prices, which are as follows: Nos. 6 to 9, \$2.05 to \$2.10 in carload lots on track, and \$2.15 to \$2.20 in less than carload lots from store; Galvanized, 30 cents extra for Nos. 6 to 14, and 60 cents extra for Nos. 15 and 16.

Pittsburgh.—There is a fairly active demand, for a number of the plants that make Fence Wire and Fencing a specialty are running to full capacity. The Pittsburgh Steel Company have recently installed a number of Fence machines in Hamilton, Ontario, Canada, and are shipping Fence Wire to the plant where it is made up into Fencing. Prices, on the whole, are fairly well maintained. We quote: Plain Wire, \$1.90, base, for Nos. 6 to 9 in carloads to jobbers, \$1.95 in carloads to retailers and \$2.05 in small lots to retailers; Galvanized, 30 cents extra for Nos. 6 to 14 and 60 cents extra for Nos. 15 and 16.

Shovels and Spades.—As noted elsewhere, the association which for several years has existed between the manufacturers of Shovels and Spades, and has, to a great extent, controlled the market, has been dissolved. It is too early as yet to know what the effect of this action will be upon prices. The manufacturers have not declared themselves on this point. It is not anticipated, however, that there will be any very radical change at present, but what the competition between the manufacturers will develop remains to be seen. In a market in which the capacity for producing goods is largely in excess of the requirements of the trade, it is to be anticipated that in the struggle for business low prices will develop. On some of the lines most largely sold existing prices are, however, uncomfortably near the cost of production.

Carriage Bolts, Machine Bolts, &c.—This is a line of goods in which for some time there has been a downward tendency, and as a result what might be termed regular quotations have become quite nominal as concessions are readily, if not, regularly obtained. The result is that the low prices which are obtainable are proving attractive to some buyers, and there is accordingly a tendency toward the placing of more liberal orders.

Wire Coat and Hat Hooks.—The market for Wire Coat and Hat Hooks is in an unsatisfactory condition, owing to the animated competition which exists between the manufacturers. As a result lower prices have been developed.

Sash Weights.—There is some irregularity in the Sash Weight market, but in the East prices are referred to as well maintained. Somewhat lower quotations have, however, become current in the West.

Cordage.—Manufacturers of Rope are getting to the point where they have about cleaned up contract orders, and where new business received is for immediate requirements. Navigation in the West will probably be closed in about a month, and the small quantity of Rope then required will be supplied by jobbers and ship chandlers. Quotations, on the basis of 7-16-inch diameter and larger, are as follows: Pure Manila, 11½ cents; second-grade Manila, about ½ cent per pound lower; Pure Sisal, 9¼ cents; Mixed Sisal, 8¼ cents per pound.

Gum Shellac.—The market has been advancing for the past three months, and higher prices are looked for by the trade. Scarcity and an active demand are responsible for these conditions. Prices are fairly uniform with the exception of those on Bleached, Fine Orange and Button, in which there is a wide range, owing to the size of stocks in dealers' hands. The following quotations represent the market:

	Per lb.
Bleached	48 to 62c.
Button	38 to 60c.
Diamond I.	60 to 62c.
Fine Orange.....	54 to 59c.
A. C. Garnet.....	41 to 43c.
D. C.	65c.
T. N.	51½ to 52c.
U. S. O.	60 to 62c.

Glass.—According to press reports from Buffalo, the Window Glass workers, at a meeting held in that city October 31, agreed upon a universal wage scale for the fire

of 1903 and 1904. This is the second report of a coming together of the rival workers' organizations, the first of which was referred to in our issue of October 22, 1903, and which proved to be unfounded. As remarked at that time, if the report proves true, it should do much to restore confidence in the market for the next fire, unless the Glass blowing machine becomes a competitor of the older method of making Glass. The local market is devoid of interest, demand being very light. There appear to be no regular prices, quotations being made by jobbers to secure what few orders are offered.

Oil.—*Linseed Oil.*—On October 30 city crushers reduced the price of Raw Oil, in lots of 5 barrels or more, to 37 cents, and in lots of less than 5 barrels, to 38 cents per gallon. Out of town and Western Oil is quoted at 35 cents per gallon. Probably an advance of a cent per gallon would be asked in less than 2 or 3 barrel lots. The reduction in price has not improved demand, which continues of a hand to mouth character.

Spirits Turpentine.—On November 3 Spirits advanced ¾ cent per gallon, at Savannah, which gave the local market a firmer tone. The freight handlers' strike is interfering with the movement of Turpentine from Savannah, and the local market is depending upon Wilmington almost entirely for supplies. The market is firm at the following quotations, according to quantity: Oil barrels, 60 to 60½ cents; machine barrels, 60½ to 61 cents per gallon.

Correspondence.

A Recollection of M. C. Ogden.

To the Editor: Your notice of the death of Mortimer C. Ogden recalls an incident which happened to him of so singular a nature that it may interest many of your readers:

On April 19, 1861, the great Union meeting that was to determine the position of New York in the Civil War, then just opening, was held in Union Square of that city. All of the stores closed at noon, and from most of the downtown sections of the city masses of men poured up Broadway toward the place of meeting. In a number of instances those doing business in a certain district formed themselves into large bodies, with a band and a section of police at their head. No such organization existed in the Hardware trade, so Mr. Ogden invited about 20 of the clerks in his department of the Russell & Erwin Mfg. Company to accompany him to the meeting.

We started up Broadway, and in the vicinity of Bleecker street we overtook and passed a large delegation of business men from Cortlandt street. In their front was a band of music, and preceding them a platoon of police, with space of a few yards between them. Noticing this, Mr. Ogden called upon his squad to fall in behind the police. In this way we proceeded up Broadway until, nearing Union Square, the crowd became so dense that the police formed into files of two in order to make way into the square. We fell in behind them in the same manner. Before reaching the square, however, the pressure upon us became so great that Mr. Ogden saw we might get into danger if we continued further. He therefore called out, "Boys, we must get out of this—follow me," which we did, and made our way to the west side of Broadway, and on getting in near the buildings we were able to make our way down Broadway again, with the intention of reaching the square by means of some of the western cross streets, where the crowd would not be so great. We had got down Broadway to between Ninth and Tenth streets, the crowd at that point not being so dense, but all of them, except ourselves, surging upward toward Union Square.

As I was the youngest and smallest boy, my place in the line was in the rear of the column. Suddenly I was startled by seeing Mr. Ogden pass me, and hearing him exclaim: "Some one has taken my watch." I fell in at once behind him, and followed him up Broadway. We had gone about 100 feet when I saw him reach forward and take his watch and chain from off the back button of a man's coat tail. To release it he was compelled to give the chain quite a jerk, which evidently startled the

man who wore the coat, for he looked inquiringly over his shoulder at Mr. Ogden; but as nothing was said went his way. It is needless to say that we also went ours; but the incident of the watch was the subject of much conversation that afternoon, and is as vivid to-day in my memory as if it had occurred but yesterday, and not on that momentous day 42 years ago, which may be said to have marked the beginning of the greatest civil war ever waged.

ROBERT MATHEWS.

ROCHESTER, N. Y., November 1, 1903.

Dissolution of the Shovel Association.

THE market for these goods is now an open one, as the association of the manufacturers was dissolved October 31. The formal intimation made in this connection, from which the trade naturally inferred the termination of the agreement which existed between the manufacturers, was the sending out of a notice from John H. Parks, the treasurer, to the following effect:

This is to notify you that I do hereby avail myself of the right which I originally reserved, to revoke and cancel my conditional offer to you of a premium on your purchases of Shovels, Spades and Scoops, as per my printed Letter No. 1200-S.

Said conditional offer No. 1200-S, of a premium, will not apply on your purchases of Shovels, Spades and Scoops after this date.

The association had been in existence more than seven years and was in many respects exceptionally successful in accomplishing the objects for which it was organized. The market at the time of its organization was in a very unsatisfactory condition, with intense competition, a good deal of bad blood between the manufacturers, and the development of exceedingly low prices. To correct this condition of things a pool was formed, in which practically all the makers of Shovels and Spades were interested, which promptly put into effect much higher prices, which were successively advanced as opportunity presented, while competition was meanwhile reduced to a minimum, as many new concerns entering the field were bought up or subsidized. This competition, however, continued to develop until it was decided not to make any further attempt to eliminate or restrain it, a decision which was regarded as pointing to a dissolution of the pool at an earlier or later date. The policy of securing the business of the jobbing trade by rebates conditioned upon their buying no outside goods has been adhered to. Low prices, too, were established on the lines of goods made by outside manufacturers. There were thus many evidences of a contest for survival among the many concerns in the field.

The conditions which prevailed for the past two or three years are thus very different from those under which the association was formed. In addition to the changed aspect of the general situation an important consideration bearing on the abandonment of the combination and of the attempt to control the market is the fact that five of the leading manufacturers have been purchased by the Ames Shovel & Tool Company, who now not only control a large proportion of the output of the concerns in this line, but also own most of the leading brands. This being the case, and in view of all the circumstances, it was apparently not to the interest of these manufacturers longer to continue the arrangement which has existed, and the pool accordingly came to an end in the manner described above. The fact that there is litigation in progress by which an attempt is being made to recover rebates which the association refused to pay, together with the danger of anti-trust laws or decisions in some of the States, probably had something to do with the termination of a notable, and, in many respects, successful combination.

The future developments will be awaited with interest. The policy pursued by the association has resulted in the development of many competitors, and the market is now in a very unsatisfactory condition, resulting from the presence of a capacity for the manufacture of Shovels and Spades far in excess of the requirements

of the country. With the leading interest in a commanding position, several other manufacturers, well established and equipped, and a number of newer concerns with facilities which vary materially in completeness and efficiency, there is the prospect of an animated struggle, in which it is not likely that all will survive. Meanwhile an irregular market and demoralized prices are to be expected.

THE ATLANTIC CITY GATHERING.

IN our last issue reference was made to the programme which has been determined upon for the annual convention of the American Hardware Manufacturers' Association, which will be held at Atlantic City, November 18, 19 and 20. The programme for the meeting of the National Hardware Association, which will be held at the same time and place, has since been completed, and the work thus mapped out promises to be as interesting and useful as usual with the annual gatherings of this large and influential association. The opening session will be called to order on Wednesday morning at 10 o'clock. The special feature of this session will be a colloquy on the subject "Jobbers' Association as Viewed from an Outside Standpoint," in which Charles F. Smith, president of Landers, Frary & Clark, New Britain, Conn.; Webster R. Walkley of Peck, Stow & Wilcox Company of New York; Julius C. Birge of St. Louis Shovel Company, St. Louis; Frank R. Dickerson of the American Tin Plate Company of New York, and other prominent manufacturers will participate. In the afternoon an executive session will be held, at which reports from the different committees will be presented. All the remaining sessions of the convention will be of an executive character, including one on Thursday morning, and two on Friday. On Thursday afternoon the jobbers will attend an open session of the manufacturers, during which there will be a discussion of the subject, "Should Hardware Manufacturers Sell to Other Than Legitimate Jobbers." The social features, which will be common to both conventions, were referred to in our last issue. Those attending the convention can do so at a railroad rate of a fare and a third for the round trip on the usual certificate plan.

Chicago Special Train.

The committee having in charge the special train from Chicago *en route* to Atlantic City, carrying delegates and others to the conventions of the National Hardware Association and the American Hardware Manufacturers' Association, have decided to route this special train via the Lake Shore and Lehigh Valley instead of Pennsylvania Railroad, as originally planned. The reason for this change in the programme is the apparent inability of the Pennsylvania Railroad officials to give the committee definite assurance that the proper kind of equipment which the committee thought they were entitled to would be supplied. The arrangements now are that the special train will leave the La Salle Station, corner of Van Buren and La Salle streets, Chicago, on Monday, November 16, at 2 p.m., reaching Atlantic City between 4 and 5 p.m. on the afternoon of November 17. The committee feel sure that those who participate in the trip will particularly enjoy the daylight run through the State of Pennsylvania over the Lehigh Valley road. The fare for the round trip will be one and one-third, with three days' layover after the closing day of the convention. By depositing the return part of the ticket at the Reading terminal at Philadelphia a stopover will be allowed for ten days, or, in other words, until December 4. This will enable those who desire to visit New York and other points to have ample time for these side trips. The Ringgold Band of Reading, Pa., will accompany the party from Philadelphia to Atlantic City. The train will stop at Elkhart, Toledo and Cleveland, at which points members and guests may join the party.

SANSOM & ROWLAND, Hardware merchants, 422 Commerce street, Philadelphia, Pa., have bought the retail Hardware business of J. M. Rowland & Co., 1626 Susquehanna avenue, and will conduct it as a retail branch in connection with their wholesale Hardware business.

HARDWARE STORE WINDOW DISPLAY.

BY C. E. ARTMAN.

THE show window should be an index to the store. Many Hardware merchants, who are careful about most every other detail of their business, overlook the importance of show window advertising. I have observed by years of experience that the merchant who has the most attractive show windows and the best newspaper advertising is the man who does the business. Window decorating, like newspaper advertising, to be effective, must be changed frequently.

Newspaper Advertising.

Any "ad.," no matter how good, should never be inserted in more than one issue of any paper, for if your customer gets used to seeing the same ad. every week, he will think when he sees your name in his paper: "It is just the same old story," and he is likely to neglect to read your new ad. when you have one. If he knows you have something new in each issue, and possibly some prices on goods that will interest him, he will read every word. Likewise the show window; if you keep it nicely decorated with new goods frequently changed, it will attract the attention of nearly every person passing the store.

Backgrounds.

In showing Tools or any polished or bright goods black makes the most effective background. Cover the bottom of window with black calico. Make a back 2½ or 3 feet high of boards. Box lids do well. Also make ends of the same material, and cover with black cloth. On the bottom arrange small Tools, such as Chisels, Compasses, Dividers, Bits, &c. On the back put Saws, Squares and larger goods; and on the ends Hatchets and Hammers.

For the background of a Stove display or of other heavy dark goods white cheesecloth serves very well. A very important essential to window decorating is the light. A brilliantly lighted window adds much to the effectiveness of a display.

Seasonable Goods.

Our aim has always been to keep our show windows up to date with just as little expense as possible. We watch the season closely, and a few days or weeks before the demand opens for different goods we have them displayed in our windows or prominently placed in the store, and at the same time advertised in the local newspapers.

In seasonable goods, such as Refrigerators, Lawn Mowers, Garden Tools and numerous other articles we make it a point to push the best goods we can buy. They show up much better than cheap goods.

There is no more lasting and effective advertisement than a well pleased customer. "The recollection of quality remains long after the price is forgotten" is a motto that we keep well before our customers. Another is: "What we say we do, we do do."

Window Cards.

Don't try to crowd your window. Display one line or kind of goods at a time; change frequently. Best returns generally result from marking the goods, especially if you have a bargain to offer mark it in plain figures. If you are displaying cheap Enamel Ware, it is best to mark each piece. If the display is of best goods, a nicely printed display card placed in the window with few words regarding quality of goods will help get the customer inside the store, when the clerk can explain quality and name price.

Lists of Goods and Prospective Buyers.

In addition to our window display and newspaper advertising, at intervals we supply each clerk with a list of seasonable "goods to push." As the clerk learns of parties who intend building, roofing or painting, or who will buy Stoves, Plows, Cultivators, Binders and Mowers, &c., he reports them to the office, and their names are placed on a "prospect book," and in a few days we either have a salesman see them or write them a personal letter stating the kind of goods we keep that they will need, and ask them to call and inspect stock and learn prices.

Show Windows Pay.

Some dealer will doubtless say, "Show window advertising does not pay." To that man I would say, when he sees a clerk idle put him to cleaning or decorating a window. Give him any suggestions that you can. Keep it up for one year, only using time that the clerk would not be otherwise employed—time that is dead loss. Watch the effect on the business, and observe the comments of customers. I need not state the result. Show window advertising is the cheapest and best advertising a merchant ever bought. The vast majority of stores do not pay one cent extra for labor for show window decorating; they simply employ the idle time of clerks.

Letter From the Trade.

COMPLAINT OF LOW GRADE TIN PLATE AND GALVANIZED AND WROUGHT PIPE.

From a Merchant in Eastern New York: The Tin that is ordinarily used in these days and put on houses is poor and will last about one-third of the time that the Tin made 20 years ago would last. The Wrought Steel Pipe which is on the market and known as Wrought Iron Pipe, is not to be relied upon as the genuine Iron Pipe was. Formerly it was uncommon to find split pipe in a lot of Pipe of the quantity purchased by the retailer, but now it rarely happens if a number of lengths are not split.

Galvanized Conductor, which we formerly called Galvanized Iron Conductor, lasts now from two to three years. It used to last 20 years. I know of Galvanized Iron Pipe which has been put in for 20 years which will now outlast such Galvanized Conductor as we are now compelled to sell because we can get no other. The trade would be interested to know where Tin can be obtained that has the lasting quality of the old style of Tin Plate. Where genuine Wrought Iron Pipe can be obtained and who makes such Galvanized Iron Conductor as was obtainable 20 years ago.

I believe that it is time to sell good material at a higher price if it be necessary rather than put out the poor material which is now on the market. It will prove cheaper for the consumer and more satisfactory to the retail merchant. I for one am ready to purchase the good material, but I want to be sure to get the quality that I am paying for.

TRADE ITEMS.

THE TRUSS & CABLE FENCE COMPANY, Cleveland, Ohio, report a decided increase in the trade on their Wire Board Fencing among the Hardware merchants. This company's Fencing requires no special Tools or experience to erect it, and is put up in small and compact reels, easily handled and stored, and it is sold by the pound, thereby allowing no waste. The company now have arrangements so that small shipments can be made from either New York, Boston, Philadelphia, Chicago, San Francisco or Atlanta, as well as from their warehouse at Cleveland or their factory at Hornellsville, N. Y. They report making shipments during the past month to South America, New Zealand, South Africa and Australia.

GRAY & DUDLEY HARDWARE COMPANY, Nashville, Birmingham and Memphis, announce a number of promotions among their employees, taking effect November 1. J. E. Mann, Jr., who has represented them in the Northwest for the past eight years, has been called in to assume the new position of sales manager. Mr. Mann will be succeeded on the road in his old territory by his brother, Wm. C. Mann. B. W. Haverfield, who has made a reputation as window trimmer and decorator, has been selected to assume the management of the retail department of the company's business at Birmingham. Arthur Lee, who has been in the correspondence department, will also go to Birmingham and will have charge of the correspondence and claim department. Combs Fort, who has been connected with the retail department in Nashville, will look after the window trimming and decorating at Birmingham.

FACTORY COST AND BUSINESS METHODS.

SELF PROVING COST SYSTEM OF BRIDGEPORT BRASS COMPANY.

BY GUY P. MILLER.

The first article in connection with a reference to the organization of the plant gave a description of the Perpetual Inventory and the manner in which the Stores, Receiving and Purchasing Departments are conducted. In the following article the course pursued in Making an Estimate is described.

Second Article. THE COURSE PURSUED IN MAKING AN ESTIMATE.

It is assumed in this series of articles that John Brown asks the factory to quote a price on 20,000 Brass Parts to sample, that the company are the lowest bidders and that

Form 100. Article *Plate* Est. No. *700*

Stock	Mixture	Temper	Gauge	Per M. in lots of 2500	Width	O. D.	I. D.	Shape
Brass	HR	HR	135	143	2 1/2			
Gross Weight	105	lb						
Scrap 2 1/2 %	2.5			2.5				
Net Weight	80							

Dept	Operations	T. S.	M. S.	O. I.	Mrs.	Tools	Supplies	Labor
33	Circle & Part	5						08
38	Chisel edges							60
36	1st Counterbore							35
	2nd							30
								32.00
								133

Fig. 10.—Form of Estimate on One Part of a Special Job. Size of Sheet, 5 by 8 Inches.

they secure the order. A drawing of the parts is given in Fig. 15, which shows the manner in which a recapitulation of the estimate is filed for reference.

REQUEST FOR QUOTATION.

On receipt of request for quotation it is sent to the superintendent's office. The estimate clerk determines the method of making the article and records the gross

Form 100. Article *Stud* Est. No. *700*

Stock	Mixture	Temper	Gauge	Per M. in lots of 2500	Width	O. D.	I. D.	Shape
Red	HR	HR	2 1/2	15				
Gross Weight	21	lb						
Scrap 3 1/2 %	7			7				
Net Weight	14							

Dept	Operations	T. S.	M. S.	O. I.	Mrs.	Tools	Supplies	Labor
36	Machining							34
36	Separating							08
								42

Fig. 11.—Form of Estimate on the Stud, Another Part of the Special Job. Size of Sheet, 5 by 8 Inches.

and net weights of metal to make 1000 pieces, the operations in their order, the piece work prices and the cost of tools for each individual part. The article, the cost of

which is recorded in the accompanying illustrations, is composed of two parts, the plate referred to in Fig. 10 and the stud referred to in Fig. 11, both of which are

Form 170. Date *June 1/03* Foreman's Estimate Blank. Dept. No. *33*

CUSTOMER'S NAME *John Brown* ARTICLE OR PART *Plate* EST. NO. *700* ART. NO.

METAL	OPERATIONS	ESTIMATED COST PER M.	ACTUAL COST PER M.
Gross Weight <i>105 lb</i>	<i>Circle & Part</i>	<i>08</i>	
Scrap <i>2.5</i>			
Finished <i>80</i>			
Quality <i>HR</i>			
Gauge <i>135</i>			
Width <i>2 1/2</i>			
Temper <i>HR</i>			
Length			

J.H.W.

Fig. 12.—Foreman's Estimate of Operations on Each Part and Estimated Cost. Size of Slip, 4 by 6 Inches.

shown in Fig. 15. The initials T. S. = Tool Steel, C. I. = Cast Iron. The figures in these columns represent pounds. The lists of operations in the foreman's estimate, Fig. 12,

Form 170. ASSEMBLING Est. No. *700*

Dept.	Operations	T. S.	M. S.	O. I.	Mrs.	Tools	Supplies	Labor
36	Assembling	2						50
38	2nd Chisel							80
39	1st Chisel							17
39	2nd Chisel							10
14	Drill hole							60
	Supplies							20
	Case							25
								4.00
								45
								162

Fig. 13.—Assembling Sheet to Cover Cost of Assembling Several Parts of Job. Size of Sheet, 5 by 8 Inches.

and their estimated costs in each department are furnished on request of the estimating clerk by the various

Form 170. Article *Brass Parts to make* Est. No. *700*

Parts	Tools	Supplies	Labor	Net Metal
<i>Plate</i>	32.00		133	12.77
<i>Stud</i>			42	2.52
<i>Assembling</i>	4.00	50	162	
	36.00	50	337	15.29
			Drill hole	3.37
			Factory Expense	3.70
			Supplies	50
				22.86
			Tools per M.	1.80
				24.66

Fig. 14.—Recapitulation Sheet, Showing Cost of Article, Including Factory Expenses and Cost of Tools. Size of Sheet, 5 by 8 Inches.

foremen who will perform the work, should the order be secured.

FOREMAN'S ESTIMATE.

The foreman's estimate, Fig. 12, is made out in duplicate, one copy being kept by the foreman for reference when the order is received.

ASSEMBLING SHEET.

In the illustration, Fig. 12, the foreman furnishes the record of metal required and names the only operation,

"Pierce and Part," which would be performed on the plate in Department 22. This information is transcribed to estimate sheet, Fig. 10. The assembling sheet, Fig. 13, is used only when the article has more than one part and covers the assembling operation and such operations as take place after the parts are assembled.

RECAPITULATION OF ESTIMATE.

The recapitulation sheet, Fig. 14, shows the cost of all parts of the article, the factory expense and the cost of

WHAT MANUFACTURERS SAY ABOUT FACTORY COST SYSTEMS.

The articles which we are publishing on factory cost methods have called out a number of letters from manufacturers, most of whom advise us that they regard the information thus given as exceedingly valuable. The following extracts from these letters emphasize the importance of the subject and show how it is regarded by

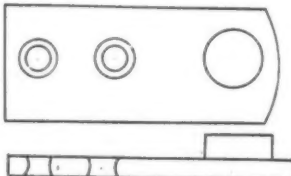
FORM 122		ESTIMATE	
Name	John Brown		
Article	Brass Parts to order according to order No. 700		
Estimated	First lot of 20 M. @ 24.66 per M.	Gross weight 126 lb. 18.17 per M.	
June 1, 1903.	Sub. lots of 20 M. @ 22.86 " "	Scrap 25 32 " 2.88 " "	
Quoted	First lot of " " per M.	Net Weight 94 " 15.29 " "	
June 3, 1903.	Sub. lots of " " " "		
UNTON — DIMENSIONS — DESCRIPTION			
			
All estimates figured per M. unless otherwise specified.			
LIBRARY BUREAU, 5 22848			

Fig. 15.—Recapitulation of Estimate on Basis of Which Quotation is Made. Size of Sheet, 5 by 8 Inches.

tools. The factory expense, which in the illustration, Fig. 14, is figured at 110 per cent., is based on the average ratio of factory expense to direct labor for the 12 months preceding the date of the estimate. The method of obtaining the monthly ratio of factory expense will be explained later. The final figures are then recapitulated, Fig. 15, the complete estimate sent to the office and the

John Brown, Esq.,	6/11/03.
New Haven, Conn.	Est. 7-700.
Brass Parts to sample.	
1st lot 20,000 -----	\$30.00 M.
Sub. " 20,000 -----	28.00 M.

Fig. 16.—Card for Card Index giving Copy of Quotation. Size of Card, 3 by 5 Inches.

quotation made to the customer after adding to the total factory cost 1 per cent. for commercial expenses and another percentage for profit.

CARD INDEX RECORD OF QUOTATION.

The stenographer who writes the letter of quotation makes out a card, Fig. 16, which is sent to the order department in the office, where it is filed alphabetically.

The next article will describe the course pursued in the factory on receipt of order, illustrating the manner in which it is entered, form of Requisition, form of Production Order, &c., thus explaining the methods by which the various elements of cost are ascertained.

our correspondents, who are representative of enterprising and progressive manufacturing interests.

A MATTER OF ABSORBING INTEREST.

From Manufacturers in New Jersey: To us there is nothing that appeals with such absorbing interest to-day as this subject.

Labor and its demands can be reckoned with to a penny, but the actual cost of the finished product is best represented by a question mark.

Too much praise cannot be given to concerns like the Enterprise Mfg. Company of Philadelphia for so generously advising as to their methods. We might add that at present we are engaged in adjusting our factory to a system; if it works out satisfactorily we propose to be in the "liberal class," too, with the information gained.

80 PER CENT. OF MANUFACTURERS NEED THIS INFORMATION.

From a New York Manufacturer: The articles you are publishing on factory cost methods will furnish a valuable kind of education for 80 per cent. of the business men of this country and the best that could be had. The trouble is there is not enough of this kind of education going on. The writer is well acquainted with about a dozen manufacturing concerns who simply figure up the cost of an article as far as they can go and think that is all there is to do; then they add 25 per cent. to that cost and place the article on the market under that impression. As a result prices are cut and salesmen are yelling, whereas if they were well posted on how to arrive at the cost with such information as the articles which you are publishing seem to give there would be less cutting, in our estimation.

ARTICLES DESCRIPTIVE OF APPROVED METHODS.

From Manufacturers in Illinois: Our opinion is that these articles would not only be of interest, but very useful, to manufacturers of the articles named, or those about to commence their manufacture, but they would be equally useful and instructive to other manufacturers whose product was of such a nature as to admit of the use of

the same form. The articles being, as we presume, exact copies of the forms in use, they would have the merit of illustrating methods that have been in use for some time past and are thoroughly approved of, and would not be considered as experiments in any way.

WILL ADOPT SOME OF THE METHODS DESCRIBED.

From Manufacturers in New York: We consider such articles of great benefit and practical interest to manufacturers. We have studied the cost as outlined by the Enterprise people considerably, and shall adopt some of their features in our own office. It would seem, however, as though there would be some reluctance on the part of the manufacturers to extend fully their methods of arriving at cost, as very few of the manufacturers care to furnish any information to their competitors, and this is especially true in the line of goods we manufacture. There has always been a disposition among manufacturers in our line to carefully conceal anything connected with the business which could be of interest to the other fellow.

We shall watch the different issues of *The Iron Age* for additional information as to factory cost methods.

SYSTEMS ADAPTED TO EACH FACTORY.

From Manufacturers in Illinois: These articles on cost keeping are a very good thing, as they tend to educate manufacturers to adopting some method of cost keeping whereby they may know just what it costs to produce any of the articles which they manufacture. This, until recently, was a much neglected subject on the part of a large number of manufacturers. They have been content to let matters drift along until the end of the season, and if they have made some money they have made it, but could not tell on what articles.

Of course the method adopted by any one manufacturer may not be applicable to any other, but it would be a very dull man who could not cull from the different articles a system which would fit his own business. We certainly think these articles are commendable and should be kept up. It may bring some manufacturers to the point where they will find out that some articles which they are making are being made at a loss, and it will lead them either to advance their prices or to improve their method of manufacturing the goods. Let the good work go on.

WILL BRING ARTICLES TO ATTENTION OF FACTORIES.

From Manufacturers in Massachusetts: I am calling our factories' attention to your articles on factory costs, and especially those set forth by the Enterprise Mfg. Company, feeling quite sure that they cannot but profit by carefully studying the methods used. Although the business varies from ours, still there are certain principles involved which every business man should be interested in, and which if carried out more systematically and practically by us all could not but result in good.

I think it very good of the Enterprise Mfg. Company to be willing to give to the public the information that has cost them so much time and expense.

KNOWLEDGE OF COSTS TENDS TO STEADY THE MARKET.

From Manufacturers in Illinois: This subject cannot receive too much discussion. If the managers of factories could come to realize what goods actually cost to make and the extra expenses which are required to put them upon the market, it would go a long way toward eradicating these extreme irregularities in prices that appear from time to time from such factories as are not fully posted as to the cost of the goods they manufacture. Anything that will set these parties to thinking whereby they can figure out some method of their own to arrive at their actual cost will be of great benefit to the entire manufacturing community.

THE BIGGEST ROOM, THE ROOM FOR IMPROVEMENT.

From Manufacturers in Massachusetts: The cost system as used by the Enterprise Mfg. Company, which appeared in the columns of your paper recently, is not only interesting but instructive.

We think that a reasonable amount of this sort of thing would be very interesting reading for a majority of manufacturers. Most of us have some kind of a system, wherein the biggest room is the room for improvement. One thing that it is perhaps wise to call particular attention to is that a man must adapt it to his own business—that is, he can't take any scheduled form and apply it without changes.

MANY DIFFERENT METHODS IN FACTORY ACCOUNTING.

From Manufacturers in Illinois: This is a matter that there is a great difference of opinion in in reference to the best method of arriving at the cost of different articles of manufacture, as in our line we could not use to advantage the method used by the Enterprise Mfg. Company, and we presume likely that this would be true in reference to the Enterprise people using our method. In some respects the method we are using and have been for a number of years is similar to the Enterprise people's method, while in others we believe that at least for our work the method we have is more practical than some of theirs. We are always interested in these different methods as many times we get ideas from them that are of value to us in our factory costs.

SOME MANUFACTURERS DO NOT FIGURE COSTS.

From Manufacturers in Indiana: We have taken considerable interest in the methods of ascertaining the cost of manufacturing goods, as published in *The Iron Age*, which is quite necessary these days of large sales and close competition. If you can bring the manufacturers to the point of figuring cost we believe you will have accomplished a world of good, to themselves, the dealer and the consumer. We, however, do not think it possible to obtain the absolute cost on some things from day to day. We have reasons to believe there are manufacturers who have not taken the precaution of figuring the cost at all, or even consider it in selling their goods; they heap it on some things and go below on others. While our plant is a small one we are well prepared to take care of ourselves in any honorable way, but we do not believe in chasing shadow prices, which we are frequently called upon to do, even in these good times when we have more than we can do. Your efforts are in the right direction. A few graduates will have a telling effect upon others, and will put them to thinking at least.

DESCRIPTIONS OF COST METHODS SUGGESTIVE TO MANUFACTURERS.

From Manufacturers in Illinois: It would appear that systems are divided into three classes, one that is contained entirely in the brain of the manager, one that is partially a matter of written record, and one that is practically all a matter of written record. The first is the one most likely to assume his system to be a perfect one. A publication of the articles on factory cost methods would at least put him to thinking that perhaps it might be improved upon a little, and the fact of putting him to thinking will certainly accomplish a great deal of good. It is not practical or possible for any published system to be copied *in toto*, but all can probably see some part of it that would be a great benefit to their already established system. The one who carries his system entirely in his head, as a rule, has no conception of a form to write it down. Your publication would at least suggest forms for him to copy.

THE ARTICLES USEFUL IN EDUCATING ASSISTANTS.

From Massachusetts Manufacturers: The articles should prove of practical interest to manufacturers, both to those who are ostensibly using an up to date system, those who have a practical one, and most assuredly those who have none. The first two undoubtedly will find valuable suggestions, which at some future time will prove applicable to their individual cases.

If only an occasional manufacturer, not at present using a cost system, becomes only partially interested, later articles and experience on his part will develop this interest to the good of his income, and eventually to the development of his competitors and associates along this same line.

Of much greater importance is it to keep up an interest in such office assistants as are at present working in connection with a system of this character, and create an interest among the assistants in places where no system is employed.

It is my belief that, generally speaking, the introducing of such a system, and improving same, are more often due to the gradual education of the assistants than to the managers themselves.

REQUESTS FOR CATALOGUES, &c.

The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses:

FROM THE N. T. BUSHNELL COMPANY, New Haven, Conn., who have just installed a new system for filing catalogues, circulars, &c., and are desirous of bringing their collection of trade literature up to date. They will accordingly value copies of the latest catalogues and discount sheets from manufacturers of Builders' Hardware, Factory Supplies and Marine Hardware.

FROM W. T. GREEN, Lebanon, Texas, who has bought the Shelf and Heavy Hardware, Stove, Tinware and Paint business formerly conducted by J. W. Stevens.

FROM ICENBISE & WHITNEY, who have lately bought the Shelf and Heavy Hardware, Stove and Tinware, Paint and Sporting Goods business of Connell Bros., Deep River, Iowa.

FROM DUNCAN-BAKER HARDWARE COMPANY, who have succeeded Duncan & Baker at Marion, Ill. The new company will carry on both a wholesale and retail business in Shelf Hardware, Stoves and Tinware, Sporting Goods, furniture, house furnishings, carpets, &c.

WHITE MOUNTAIN FREEZER COMPANY.

THE WHITE MOUNTAIN FREEZER COMPANY, Nashua, N. H., will make no material changes in their lines of Ice Cream Freezers for next season. In the company's long experience, during which time the business has shown a large and steady increase from year to year, their Freezer has been developed until, they state, it seems unnecessary to make changes either in details of construction or in mechanical principles; and the line is complete without the addition of new sizes. The White Mountain Freezer is made entirely on the company's premises at Nashua. They do their own foundry work, galvanizing and tinning as well as the wood working, machining and assembling. Every part of the work is directly under the eyes of the management, thus securing the best results in manufacturing. The company will increase the price of their goods for next season, acting in common with all other manufacturers of Ice Cream Freezers, the materials which enter into the manufacture of the machines having advanced greatly since the last change in price-list was made. The steady advance in the cost of lumber owing to its scarcity, which is growing more pronounced every year, is the main reason why the price of Freezers will be higher for 1904. The company report that the past season's business showed the usual substantial increase in volume, while the export demand has kept pace with the growth of the domestic trade.

J. A. KRIDER, formerly connected with the sales department of the Atlas Bolt & Screw Company, Cleveland, Ohio, has just opened up in the manufacturers' agency business at 1262 Monadnock Block, Chicago. Mr. Krider will represent his clients to the trade of Chicago and the Northwest. At the present time his accounts include the Atlas Bolt & Screw Company and Cleveland Cap Screw Company of Cleveland and the Safety Door Hanger Company of Ashland, Ohio.

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BIGELOW & DOWSE COMPANY'S NEW ESTABLISHMENT.

ON January 27, 1903, fire destroyed the wholesale establishment of Bigelow & Dowse Company of Boston, leaving nothing but the scarred walls. As the process of rebuilding and re-equipping progressed the company were quick to seize the opportunities which

and the completeness of their establishment, will be recognized in the picture, together with some of their staff. Mr. Bigelow and Mr. Dowse have given a great deal of attention to the details of arrangement and convenience of their new store, and much of the credit for the systems and contrivances described in this article should be attributed directly to their ideas.

The Cutlery room, illustrated in Fig. 2, is arranged so



Fig. 1.—The Offices of Bigelow & Dowse Company.

came with disaster, new appliances and modern conveniences replacing what probably had been the best in their day. The new store, which is built within the shell of the old one, is furnished with devices for the economical handling of both Light and Heavy Hardware, and arranged for the convenience and comfort of customers and employees. The frontage of the store on Franklin street is 107 feet, with five stories above the

basement. that everything in stock is readily shown to customers. There is ample light, both from the sun and electric globes, daylight being diffused by prismatic glass at the rear, the same method being employed in the shipping room next to it.

In Fig. 3 the method of arranging Pocket Knives, Scissors, &c., is shown. The cases at the left are 31 feet long, with a black sample board above the cases. This is

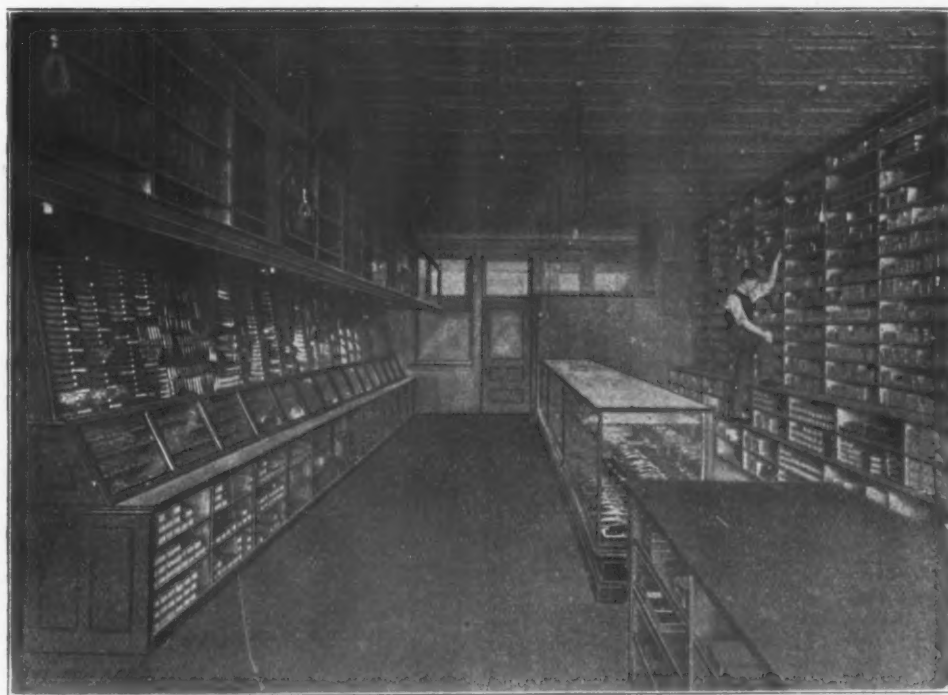


Fig. 2.—Cutlery Room.

basement. The offices, shown in Fig. 1, occupy the entire front of the first floor, extending back 25 feet. At the rear, extending 50 feet beyond the offices, are the shipping and Cutlery rooms, the latter 20 x 50 feet in size.

The view which is given of the offices of the company indicates something of their convenience and extent. Samuel A. Bigelow and Charles F. Dowse, who have built up the business to its present dimensions, and are to be congratulated on the position which they have achieved

in three sections, so that any one may be quickly taken down for convenience in wiring new goods upon it. The glass fronts of the cases, below the sample board, slope from a point $7\frac{1}{2}$ inches from the board at the top, to $17\frac{1}{4}$ inches at the bottom. The ledge at the foot of the case is $24\frac{1}{4}$ inches wide, and 28 inches above the floor. The glass doors are each $26 \times 17\frac{1}{4}$ inches in size. Trays containing Cutlery rest upon strips of wood $\frac{1}{2}$ inch square. The company's method of sampling Pocket Cutlery is

unique, each tray containing goods of a single price. If a customer asks for \$4 Knives, trays filled with samples of that price are shown him. If he wishes an assortment of Knives of several prices he does not have to go over a lot of individual boxes, each containing a Knife of a given price. Instead he is shown trays filled with \$3.25



Fig. 3.—Arrangement of Pocket Cutlery, Scissors, Etc.

Knives, others of \$4 Knives, others of \$4.25 Knives, &c. The customer thus has the situation well in hand, with nothing to distract his mind in keeping track of prices. Each tray has 22 shallow grooves, 1 inch wide and $\frac{1}{8}$ inch apart. The trays are $9 \times 25\frac{1}{2}$ inches in size, the lower edge having a beading to prevent the goods slipping

perience is that with this method customers are apt to order more goods than they had planned to buy. The cases are lighted by incandescent lamps placed beneath the eaves within, the light flooding the goods without striking the vision of the customer. Everywhere in the Cutlery room the artificial light is directed to fall upon the showcases and shelves instead of in the eyes.

On the second floor is the storeroom for Light Hardware, shown in Fig. 4. There are six bays of shelving, each 45 feet long, with a 12-foot space all around and between the shelving. In case of a rush of orders this space can be utilized for packing. The arrangement for reaching goods on the upper shelves is shown more in detail in Fig. 5. At the base of each side of shelving is a step 20 inches high and 4 inches wide. Eighteen inches above the step is a ledge 12 inches wide. Twelve inches above the ledge is a line of $1\frac{1}{4}$ -inch galvanized wrought iron pipe extending the entire length of the shelving, supported by stout galvanized wrought iron brackets. The pipe is large enough to afford a good grasp of the hand, and stiff enough to bear the weight of a man when standing upon it. Five feet above the ledge is a second pipe, the counterpart of the first. The combination of step, ledge and rods affords the men working about the shelving, filling orders or replenishing stock, facility of movement with the least possible physical exertion. Each double set of shelving extends not quite to the ceiling. Just enough space is left to permit of a slightly pitched roof, with eaves projecting 3 inches over the face of the shelving. This is so arranged that in case of a flood of water from fire hose the water will drip off without wetting the goods; also to permit dropping a fire blanket as a curtain in front of the goods on the shelves. On this floor is a capacious room for catalogues and for the use of the company's salesmen.

The third floor contains long bays, made up of tier upon tier of unfinished wooden boxes, the same as were rushed together by the company's men for the temporary store the day after the fire. The boxes are 36 inches long and 22 inches high at the open front, and 12 inches deep. A board along the front at the bottom makes of such a box an excellent bin.

The upper floors of the building are arranged as general storerooms, including racks for Shovels and Steel Goods. Two electric dumbwaiters, with telephone service, connecting all floors from the basement up, make the



Fig. 4.—Storeroom for Light Hardware.

off. The trays for Knives are of polished hard wood, while those for Scissors are covered with plush. There are frequent expressions of approval by customers regarding this method of displaying goods, because it enables them to make their selections more quickly and with greater satisfaction. They feel that they have seen everything in making their selection, and the company's ex-

filling of orders easy. The company have adopted a device of their own to guard against accidents which too often happen to employees who stick their heads in the elevator shaft to see where the car may be. A chain is suspended from the bottom of the dumbwaiter, to which are attached wooden cubes at a distant apart equal to the distance between floors. The cube nearest the car is

No. 1, so marked on each of its four faces; the next is No. 2, then No. 3 and lastly No. 4. As the car reaches the top floor, for instance, the No. 1 cube is opposite the



Fig. 5.—Facilities for Reaching Upper Shelves.

fourth floor opening, No. 2 is opposite the third floor, &c. In this way the location of the car is quickly ascertained.

The basement is given over to the heaviest hardware. In it is storage room for 4000 kegs of Nails, besides Building Paper, Zinc, Barn Door Hangers and



Fig. 6.—Nail Lift.

Nails, and other heavy goods. In the basement also is a fire proof room for storage of Ammunition, which the authorities compelled the company to provide, as a result of the fire.

The Nail lift, shown in Fig. 6, is located in the basement. A heavy inclined plane supports an endless chain

with two carriers each shaped to take one keg of Nails. The chain works on a ratchet wheel at the top, and another set beneath the floor. The carriers come up through an opening in the floor, and take the kegs as fast as they can be rolled into place. Ten kegs, or $\frac{1}{2}$ ton of Nails, are thus lifted each minute. The carriers lift the kegs to a platform $2\frac{1}{2}$ feet above the sidewalk, from which point they can easily be loaded into drays.

The basement also contains two fire proof rooms, in which is the apparatus for operating the two electric freight elevators. The building is substantial in every respect, and the greatest care has been taken to provide abundance of light and ventilation, as well as every sanitary convenience for employees.

It is apparent that the fire which destroyed the company's store has resulted in a real gain to the old firm. It is the beginning of another chapter in the history of a business which had its origin when the firm of Horton & Cordis was established in 1839, and which has been growing and becoming a more important factor in the territory covered by it as each succeeding decade slips by.

PRICE-LISTS, CIRCULARS, &c.

Manufacturers issuing new catalogues or price-lists are requested to send to THE IRON AGE two copies—one for the Catalogue Department in the New York Office, and one for the Iron Age Library of Trade Literature in London.

READING HARDWARE COMPANY, Reading, Pa.: The Reading Transom Lifter. An illustrated price-list describes the Lifter, showing the different positions in which it may be applied to Transoms.

THE SCRANTON MERCANTILE COMPANY, Scranton, Pa., as agents for a number of manufacturers of Mill Supplies, issue an illustrated catalogue of these goods. It also contains Kline's series of discounts from $2\frac{1}{2}$ to 90 per cent., inclusive.

THE J. B. FOOTE FOUNDRY COMPANY, Fredericktown, Ohio: Illustrated circulars of School and Church Bells, Saw Vises, Third Folding Buggy Seats, &c.

J. R. CLANCY, Syracuse, N. Y.: Price-list No. 15 of Sure Grip Rust Proof Hose Clamps, for hydrant, cotton mill, suction, tank and steam hose; also Vise Jaws for adjusting the clamps.

SILVER & Co., Brooklyn, N. Y.: Illustrated catalogue of Silver's Brooklyn Artistic Bath Fittings, including Paper Holders, Towel Rods and Bars; Soap, Sponge and Brush Holders, Thermometers, &c.

BUTLER BROS., New York: November, Santa Claus edition of "Our Drummer," containing more than 400 pages. A very interesting chapter on "Easy Business" is presented, which contains valuable suggestions, especially designed for the Christmas holidays but good all the time, as to how to attract business and make the store a success. The advantages possessed by 5 and 10 cent Christmas counters are pointed out, and a list given of "expert assortments" of holiday goods.

SARGENT & Co., 149-153 Leonard street, New York, and New Haven, Conn.: Advertising matter relating to their Gem Food Chopper for distribution among Hardware dealers. One is a descriptive suggestive 48-page illustrated pamphlet, $7\frac{1}{4} \times 5\frac{1}{4}$ inches, containing prepared full page advertisements for newspaper and trade journal advertising, together with others varying in size, requiring only the address of dealer to be inserted in type in a space left in each electrotpe. Another device is an illustrated card hanger, $17\frac{1}{2} \times 9\frac{3}{4}$ inches, attractively printed in colors on both sides, calling attention to the Gem Chopper.

The interests of the Ensley Stove & Hardware Company of Ensley, Ala., and of the Estes Hardware Company and Hopkins Stove & Tinware Company of Birmingham, Ala., have been consolidated under the style of Birmingham Stove & Hardware Company, who will continue the wholesale and retail business in Hardware, Stoves and Tinware, House Furnishing Goods and Crockery.

BRITISH LETTER.

Offices of *The Iron Age*, HASTINGS HOUSE,
NORFOLK ST., LONDON, W. C., October 24, 1903.

The Week's Hardware Trade.

REPORTS on trade all the way round continue to be bearish. The home trade is undoubtedly sluggish, more particularly in the agricultural districts, which have suffered from the wet, cold summer and autumn. There is some improvement reported from Lancashire, owing to the revival of the cotton trade, but there are heavy arrears to make up, estimated at not less than \$10,000,000, as the value of the trade lost during the American cotton corner. London is just now buying in anticipation of winter requirements, but the season is admitted to be an unsatisfactory one in consequence, in some measure, of the heavy sacrifices imposed upon the moneyed classes by the late war and the heavy depreciation of family sureties thereby entailed. In those departments which continue busy prices are unremunerative. There is a good demand for Wrought Iron Gas Tubes, and a less demand for Brass and Copper Tubes. Makers of Ship, Cart and Carriage Lamps are busy, but the Lamp Stove branch is distinctly below the level of the season, more particularly in regard to Heating Stoves for shop use. Business in Sheffield is described as "shockingly bad." In regard to the season trades, some of the older houses in the Cutlery and Plating departments report that orders are coming in more freely for season goods, but the demand is not yet up to the average. Distributors apparently have considerable stocks on hand, and with the prospect of a quiet season and with money hard to collect, they do not care to commit themselves any further than they can help. One or two of the Sheffield Hollow Ware manufacturers report good orders recently received from Scotland.

On overseas account, Northern European markets show a tendency to contract, but there is improved business done with India and the Far East, notwithstanding the threatening aspect of the Russia-Japan dispute. Spain and Italy are both sending good orders for Tools, Machinery, Guns and Sanitary Fittings. The improvement in German orders, upon which I have recently commented, continues, but otherwise European orders are quiet.

The Municipal Trading Bugbear.

The ironmongers of Edinburgh strongly complain of the way the City Council trades in Gas Stoves. During the last ten years they have purchased gas appliances to the value of £30,406. The practice of the City Council, through their Municipal Gas Department, is for the intending hirer or purchaser to visit the showroom and there select the particular appliance which suits his fancy best. The goods are then ordered from the makers of the particular appliance and sent to the consumer's premises.

American Baths in Manchester.

There is some annoyance among those concerned that the Midland Railway Company should have bought enameled Baths of American make for their big hotel in Manchester. This hotel is quite one of the biggest in Great Britain, if not actually so. The manager has been extremely anxious all through as to the fittings of the hotel, and he determined that he would get the best obtainable. The merits of the American Bath having been extolled, he sampled one or two, with the result that they have been adopted throughout the hotel. The test seems to have been not only their appearance but their capacity for resisting shock. British makers insist that they, too, can supply baths which will resist being pounded with a hammer without shedding their enamel. Still, the fact remains that the American Bath is now installed in what is probably the biggest hotel in Great Britain.

Cutlery Trade of Egypt.

The following notes respecting the Cutlery trade of Egypt are taken from a report on this subject published in the "Bulletin" of the French Chamber of Commerce at Alexandria:

Egypt, with its 10,000,000 of inhabitants, depends on foreign sources for its supply of Cutlery, there being

neither cutlers nor manufacturers of Cutlery in the country.

The amount and value of imports cannot be definitely stated, as in the trade returns these articles are included under the heading of Ironmongery.

Table Knives, with handles of wood, bone, horn or white metal, are supplied by a French firm at from 2.50 to 30 francs (48 cents to \$5.76) a dozen, and ordinary qualities at from 12 francs (\$2.30) to 18 francs (\$3.45) a gross; Fruit Knives, with bone handles, 17 francs (\$3.25) a gross, c.i.f. Alexandria, at 5 per cent. discount.

Sheffield sends Table Knives, with handles of bone, wood, celluloid or ivory, at from 36 cents to \$8.85 a dozen, and German Knives, with handles of cast iron, at from 2 to 21 marks (48 cents to \$5) a dozen.

Carving and Butchers' Knives are principally provided by France and Germany, in equal shares, prices varying between 2.25 francs (45 cents) and 11 francs (\$3.12) a dozen, according to quality.

The British goods of superior quality have only a limited sale, owing to their high price.

Germany (Solingen) sends the largest number of Clasp Knives, in cheap quality, with celluloid handles, at about 3.50 francs (68 cents) a dozen. Sheffield supplies Pocket Knives with several blades at from \$1.20 to \$2.88 a dozen. The demand is good, but a high priced article does not suit the market. In addition, small quantities with horn handles come from France and sell at about 48 francs (\$9.20) a gross.

Scissors are chiefly supplied by Germany at 2 francs (36 cents) a dozen.

A special kind, but of ordinary quality, is furnished to native tailors by England at 72 cents a dozen. America sends a quality of Scissors with varnished handles (marked Victor No. 216 c/m) at 22 francs (\$4.22) a gross, with 15 per cent. discount.

Germany heads the market for Razors at 12 francs (\$2.30) a dozen and upward (black handles). Great Britain comes next with several kinds at from \$1.45 to \$17.25 a dozen. In spite of good quality France finds but a small market, owing to high prices. There is, however, a considerable demand.

It is thought a Cutlery store with an experienced workman to attend to Surgical Instruments, Razors, &c., would succeed in Egypt, and it is the opinion of the "Bulletin" that an experienced optician and Lamp maker, capable of constructing special glasses according to requirements, would prosper. A good stock of tools and some capital would be necessary.

Canadian Duty on Patterns.

Some annoyance having been caused among travelers in Canada by being compelled to pay duty on their samples without refund when the patterns are brought back to the country of origin, the Colonial Office has been in communication with the Canadian Government, with the result that the Canadian Government will very shortly make an announcement on the point. While the matter is more irritating to British travelers, because they come from a free trade country, it is obviously of more importance to American travelers.

The Wire Nail Trade.

The September report of the Union of German Wire Nail Manufacturers states that the home trade showed a notable expansion in demand. The sales were more than 50 per cent. greater than in August this year and September, 1902. The more active trade was due to the fact that customers were forced to cover pressing requirements. The better business may have been assisted further through purchasers having been approached personally regarding the reports circulated concerning the future of the Wire Nail syndicate. The export trade also showed an improvement during September.

Lourenco Marques.

The port of Lourenço Marques (Portuguese Africa) is one of the points of communication between the Transvaal and the Indian Ocean. Concerning some competitive Hardware lines coming into this port the following notes should prove useful to American exporters. There is a large and increasing demand for galvanized iron.

and Great Britain appears to have a practical monopoly of the trade.

Germany and the United States are strong competitors with Great Britain in the Nail trade.

The same remark applies with regard to Barbed Wire and to Plain and Black Fencing Wire. Cheap freights for Fencing Standards assist the Germans.

In Tools Great Britain seems to hold her own in most lines, but there is a demand for a cheaper article, which both Germany and the United States are willing to supply. The latter is probably the more dangerous rival of the two.

In Paints and Oils Great Britain has no serious rival at present.

The United States, Germany and Austria-Hungary appear to take trouble to study the wishes of the buyers of furniture. It does not follow that articles which suit people in Great Britain will be equally acceptable in Lourenco Marques.

The trade in Glass is largely in the hands of foreign manufacturers. The British article is stated to be relatively more expensive and the methods of packing are said to be inferior. In this case bad packing means higher freights as well as damage.

The Purchasing Capacity of the Kaffir.

The writer of the above notes, speaking on the possible development of trade with the Kaffir, thinks that the volume of trade with the native will be trebled in ten years. The reasons he gives for this statement are: (1) The increased number of natives who are in receipt of a high rate of wages; (2) the opening up of the inland districts of the province; (3) the construction of a railway to Swaziland, and the consequent revival of trade in that country; (4) the rapidly increasing demands of the natives for European products. Some of the metallic goods dealt in are Cutlery of every description, but chiefly Butchers' Knives, Pocket Knives and Scissors, Sickles, Vermin and Game Traps, Tin Trunks, Camp Kettles, Tin Dishes and Mugs, Kaffir Picks and Hoes, three-legged cast iron Pots with covers. It must be remembered that, so far as Portuguese territory is concerned, the retail dealer is nearly always a native of India, and it would be as well that travelers sent to study the trade should have a working knowledge of Hindustani.

Prospects in Peru.

The Peruvian Government have in view the purchase of Wire Ropes or other aerial devices for crossing rivers or ravines in places in Cordillera where bridges are likely to be destroyed. In the near future there will be openings for the trade in electrical appliances of all kinds. There are already quite a number of installments for supplying electric light to towns and private houses. So far, all orders for the plants have been placed with American, German and Italian firms. It is important to have active and reliable agents on the spot to seize advantage when the opening occurs. Pipes will be required for the drainage of Callao, but no tenders will be invited until water pipes recently ordered from Great Britain shall have been laid down and fresh funds obtained for the drainage of the town. There is no doubt, however, but that the scheme will be carried through in due course. Among the plans for the improvement of Lima is a project for the acquisition of refuse destructors. The municipality is anxious to secure these, but want of funds postpones the purchase. Callao, Arequipa, Cuzco, Piura, Trujillo—in fact, almost all Peruvian towns—are worse off than Lima as regards sanitary arrangements of every kind. American sanitary engineers who have had experience in this department might do worse than see if they cannot pick up some contracts in the chief towns of Peru. A notable feature of mining in Peru during the past two years has been the influx of American capital. The following figures show the extent of the trade in machinery, coal, Tools, Hardware and lumber done with Peru by the following countries. The figures are for 1902:

Great Britain.....	\$2,630,000
Belgium	445,000
France	350,000
Germany	1,250,000
Italy	140,000
Spain	60,000
United States.....	2,320,000

JOHN W. WAGNER.

JOHN W. WAGNER, president of the Wagner Hardware Company, Mansfield, Ohio, died at his home Thursday morning, October 22, after a protracted illness. Mr. Wagner was born in Canal Fulton, Stark County, Ohio, January 21, 1836. He was the son of Henry and Mary Wagner, both of whom came to that State from Pennsylvania. At the age of 14 he began his career as a canal boat driver. Three years later he secured a position as clerk in a Hardware store conducted by his father's employer, John Robinson, and was thus occupied until 1862, when he bought the store and good will of the business. In 1870 he sold his interests and removed to Canton, Ohio, and associated himself with Bucher & Gibbs in the manufacture of Plows, and continued in this industry until 1873, when he formed a



JOHN W. WAGNER.

partnership with E. J. Forney, and purchased a stock of Hardware from John Reed, Mansfield, Ohio. In 1882 Mr. Wagner bought out his partner's interest in the business, which by this time had greatly expanded. He continued the business individually until 1891, when he admitted his son, C. C. Wagner, to partnership, under the firm name of Wagner & Son. In 1896 the business had grown to such proportions as to render expedient the organization of the Wagner Hardware Company, of which he was elected president, continuing in that position until his death. In 1884, soon after the organization of the Mansfield Mutual Fire Insurance Company, Mr. Wagner was chosen president; he was also a director in the Citizens' National Bank and the Humphreys Mfg. Company, all of Mansfield. Mr. Wagner was a man of sterling worth and integrity, and held in the highest esteem by his fellow citizens.

BEALL SHOVEL COMPANY.

BEALL SHOVEL COMPANY, Alton, Ill., have been manufacturing a full line of Shovels, Spades and Scoops about two and one-half years. Their business has so far exceeded their expectations that they have enlarged their plant three times in order to meet the wants of the trade. They are now making preparations to make a full line of Maynard pattern Shovels, and will be ready to furnish them to their customers for the spring trade. The company state that these Shovels will be the very best that can be made, and the trade-mark or label they have adopted for the brand is the "Silver King." As the company are perhaps the oldest manufacturers of Miners' Tools and Miners' Supplies in the country, the reputation in this line which they bear with the jobber and the miner, has, of course, helped them materially in

the sale of their Shovels, which has become an important branch of their business.

SALES TO CONSUMERS; ESPECIALLY BY CATALOGUE HOUSES.

BY W. O. BOYKIN.

I HAVE read with interest the discussion in *The Iron Age* on the growth of the retail Hardware merchants' associations, and believe there is still more to be said to impress the members with the importance of their work, and to imbue them with the proper enthusiasm which is so necessary to accomplish any great and good work.

These associations are designed to protect the rights of the retail merchant, by preventing any firm who obtain jobber's prices (it matters not whom) from soliciting and selling direct to the consumer, which trade so justly belongs to the retail merchant. This branch of the mercantile world is very essential to the convenience and comfort of the consumer in distributing promptly goods that his wants immediately demand. It would be a very false prophet who would venture to predict that in the course of time the retail merchant will become a thing of the past, and that all goods will be sold and distributed to the consumer by the jobber, manufacturer or the catalogue house. However, there are some unpleasant things that are now crippling the progress of the retail business and demand the serious attention of the retail merchant.

First.—There are some jobbers and manufacturers who are so very anxious to sell their goods that in some cases they quote and sell direct to consumers.

Second.—The catalogue houses, with their untiring energy, are constantly soliciting consumers with ridiculous prices, and, I am sure, we all agree that they are by far the worse of the two evils; in fact, there is hardly enough of this unfair business done by the jobbers and manufacturers to keep up the desired interest of the members in reporting such to the associations. There are very few, if any, jobbers and manufacturers, when notified by the associations of their error, but who will not gladly get back in line, as they so thoroughly realize the importance of the good will of the retail merchant.

Catalogue House the Chief Aggressor.

While it is very necessary to keep a close watch after the jobbers and manufacturers, yet the most important feature of the problem is the catalogue house, and as to how we are to hobble the monster and drive him out of our own field should demand the most serious thoughts and efforts of retail merchants. According to my opinion, the retail merchant has within his grasp the power to practically eliminate this evil from his territory. However, it may be a long battle and will necessarily have to be carried on systematically.

In the first place, there is no retail merchant who cannot buy from a large jobber all goods cheaper than the consumer can buy from a catalogue house, and in most cases considerably cheaper. When a customer comes into your store springing catalogue house prices, my idea would be to sell him even if you fail to make a red cent on some of the items. By all means sell him, and always for cash, as he must pay cash in advance if he buys of the catalogue house, and then wait for the arrival of the goods and the likelihood of their being delayed, lost or damaged in transit.

These are important facts that should be impressed on the customer's mind. I always found when selling an order to such a customer that there was enough difference in some of my goods and his catalogue pictures to leave me room to talk quantity, &c., and as there is a certain amount of satisfaction in seeing the goods when one buys and being able to take them away with you, this gave me an advantage over the catalogue house, and in the aggregate I made a fair profit. No one at a distance, by means of letter and catalogue, can make a sale so effectively as the salesman in person, with the goods to show the customer. Therefore,

Take the Business.

turn your money often, buy in reasonably small quantities, keeping in touch with the best market prices. Carry a nice variety of goods, and if it is necessary to make a special order for goods not carried in your stock, and you find the catalogue house can furnish as cheaply as you can, accept the order and collect the money when you do so. It is true you do not make any profit on the sale, nor do you lose anything, but there are three other important features to consider. You get the use of the money 60 days free, as your jobber will sell you on 60 days' time; you knock the catalogue house out of the sale and you hurt its standing with your customer, while you also strengthen his confidence in you as a business man.

When a church or school house is being built in your town or neighborhood, get your prices and have them ready on the Bell they will need, even if you have to sell this Bell at cost or a little less. Sell it on any terms, for you cannot afford to let the catalogue house have a ringing advertisement for themselves in your town, when it should be ringing for you.

Be masters of the situation; know your goods and be posted on the market. By making these sales and keeping yourself posted on prices, your trade will have confidence in you and gladly give you all the business they can. Keep a memorandum of such cases with a full history as to how you handled them, and whether you were or were not successful, and present them to the association for discussion at the meetings, thus getting new ideas from each other.

Factory Brands.

Again, why should a retail merchant buy a factory brand of goods that is sold also by the catalogue house? When he does, he only assists in cutting his own throat. There are enough good brands manufactured that the catalogue house cannot touch to supply the trade and give just as good satisfaction in every respect. The moment the retail trade stops buying a certain brand of goods, at once the jobber necessarily follows suit, and as the manufacturer cannot afford to give up the patronage of all of the jobbers for the sake of selling a limited quantity to the catalogue house, he will realize the necessity of withdrawing his sales from the latter and come in the fold for protection.

REED MFG. COMPANY.

THE REED MFG. COMPANY have recently been organized in Pittsburgh, Pa., and have opened offices in the Keystone Building, in that city. The company advise us that they will erect several plants for the manufacture of Hardware Specialties, one of these being a line of Shears and Scissors. These Shears and Scissors will be fitted with a gauge for cutting cloth, whether to be cut on the bias or straight. By its use it is claimed that it will be impossible for the cloth to be hacked. The gauge device is very simple, and the Shears thus fitted can be sold to the consumer as cheaply, we are told, as other Shears and Scissors. The company already have from 20 to 30 practical devices, the patents of which they own. The company have bought the business of F. H. Farnham, Cincinnati, Ohio, manufacturer of Shears and Scissors, and several other successful Hardware Specialty concerns. The Reed Mfg. Company are a corporation formed under the laws of the District of Columbia, with a capital of \$200,000, and were organized for the purpose of taking over this business. C. N. Reed of Tarentum is secretary and treasurer.

KELLEY, MAUS & Co., Chicago, jobbers of iron and steel, wagon materials, &c., are sending to the trade a steel engraved announcement of their removal to their new warehouse at 1 West Lake street. The announcement is headed with a steel engraving of their building, which is over 300 feet long, flanked at one side by the Chicago River, and on the other by a network of railroad tracks.

THE FAIRBANKS COMPANY'S TRUCK CATALOGUE.

THE FAIRBANKS COMPANY, Broome and Elm streets, New York, have just issued illustrated catalogue No. 373, confined entirely to Trucks, Carts and Barrows, consisting of 128 pages. It describes goods of this character for railroads, steamships and other transportation companies, store and sidewalk use, warehouses, factories, foundries, mills, offices, banks, hotels, brick-yards, stone yards, &c. The lists are now so arranged for both two-wheel and four-wheel Trucks that a single discount can be given from the two classes. A well arranged cipher code for telegraphing is given, and in connection with each kind of Truck the dimensions are printed uniformly so as to show the important features at a glance. At the back another innovation is a price-list of Wheels used on these Trucks, together with a price-list of cast iron Truck Wheels, both plain and rubber faced, sold separately.

AMONG THE HARDWARE TRADE.

B. B. Little has disposed of his Hardware, Stove, Paint and Plumbing business in Garrison, Iowa, to Haines & Hart, who will continue at the old stand.

Kline, Dean & Rogers, dealers in Hardware, lumber, &c., have purchased the stock formerly carried by Darling & Rogers, Addison, Mich. Willis Rogers will act as manager.

F. C. Blossom has bought the Shelf Hardware, Stove, Tinware and furniture business of French Huitt in Creighton, Mo.

John D. Wyker, Decatur, Ala., who has been identified with the Hardware business at that point for the past 15 years, has taken possession of a new building erected just opposite his old location. The new store is 43 x 120 feet, two stories and basement, having double the capacity of the old premises. Mr. Wyker's business is principally retail, but some jobbing is also done. The lines carried embrace Shelf Hardware, Paints, Oils, Mantels and Wall Paper.

M. S. Clark has disposed of his Hardware, Stove, Tinware, Agricultural Implement, Paint and Sporting Goods business in Parker, S. D., to the Roper-Morgan Hardware Company. The company expect soon to commence the erection of a new building much larger than the present store.

The Farmers' Hardware Company, E. R., S. D. and C. F. Carter, proprietors, have just embarked in business in Danville, Va.

The S. W. Barnett Hardware Company, Montgomery, Ala., have just taken possession of a building specially erected for them opposite their present quarters, and covering numbers 116-118. It is 170 x 50 feet, five floors, including basement, and is wholly occupied by the company. The basement has cement floor, all the heaviest goods being stored in it. On the first floor are the shipping and sample room, only Shelf Hardware being kept there, the three other floors being occupied by goods of all kinds in bulk. A special feature of the first floor is the six transoms in front, 7 x 4 feet, each fitted with Luxfer Prism Glass, by which the store is fully lighted in every part. There is a spur track at back of building, from which cars are unloaded. Goods handled are Hardware of all kinds, Stoves, Tin and Wooden Ware and Agricultural Implements. The territory covered by the house is Central and Southern Alabama, with parts of Georgia and Florida.

The Loeb Carriage & Supply Company, Montgomery, Ala., have moved to 120 and 122 Commerce street, the new premises being much more extensive than the old.

There are five floors, 170 x 150 feet, all occupied by the company. The company started in 1878, dealing in Saddlery, Harness and Vehicles, four years later adding Carriage and Wagon Hardware, with Blacksmiths' Tools and Supplies, since which time they have further added Railroad and Contractors' Tools and Mill supplies.

Geo. Frederiksen has bought the Hardware and Harness business formerly conducted by Franklin, Davis & Co., in Brayton, Iowa.

The *Western New Yorker*, Warsaw, N. Y., in its issue of September 25 presented an illustration of the handsome exhibit made by the Ballantine Hardware Company of that place at the recent Wyoming County Fair.

Graham-Salisbury Hardware Company have recently embarked in business at Pasadena, Cal. They are handling a general line of Shelf and Heavy Hardware, Stoves and Tinware, Farming Implements, Sporting Goods, &c.

The Lipscomb Disk Screw Calks and Tools.

The New Britain Hardware Mfg. Company, New Britain, Conn., are offering the calks and special tools shown in the accompanying cuts. The longer lengths of the calks illustrated in Fig. 1 are used mainly by loggers and in the sports, while hunters, surveyors, woodsmen, ice cutters and others use the shorter lengths. The No. 00 is referred to as being most desirable as an ice calk, and convenient for frequent removal or attachment by the



Fig. 1.—The Lipscomb Disk Screw Calks.

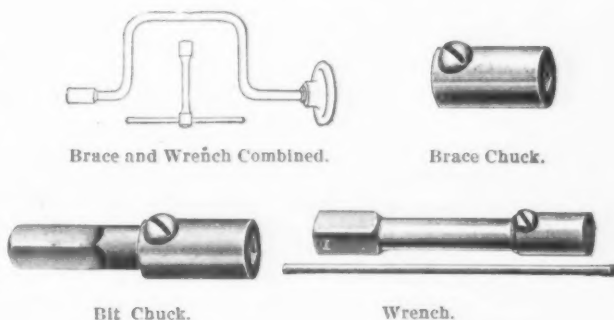
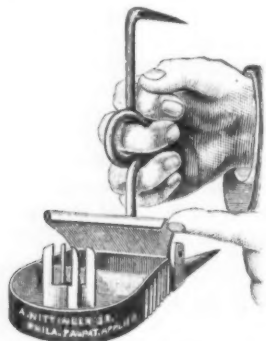


Fig. 2.—Special Tools for Attaching the Calks.

use of the brace. To a great extent it will take the place of hob nails for those desiring roughened shoe soles for any purpose. The spikes of the calks are alluded to as being hard and tough and the disks as thick and strong. The calks, it is explained, do not pull out, nor work into the feet; that they are always held upright by the broad disk, which prevents bending in wet or inferior leather. In Fig. 2 the brace chuck is designed to replace a worn chuck, while the wrench may be used in a carpenter's brace. Among the superior features mentioned are the following: The ease and rapidity with which they are attached and removed, a great number of times if need be; that they will stand as much wear as an equal number of the hardest driven calks, and will bear twice the strain before giving way; that when worn short they can be removed and new calks turned into the same holes, and that because of their strength half the usual quantity will give safe and efficient service. One box contains 50 calks, which are deemed sufficient for the average logger.

Combination Candle Holder and Match Safe.

August Nittinger, Sr., 826-830 North Fourth street, Philadelphia, Pa., is placing on the market a new combination candle holder and match safe, as illustrated herewith. The device, which is designed for the use of butchers, plumbers and manufacturers generally, and is covered by patent, is made of malleable iron and steel throughout. It is provided with three sharp points, two at the base and one at the upper end, by which it can be planted firmly in the wall or wood. It can also be



Combination Candle Holder and Match Safe.

conveniently carried or lowered into wells or cisterns, the candle maintaining an upright position and the waste grease accumulating in a portion of the base provided for that purpose. A suitable compartment, with lid, is provided for use as a match holder. The device is furnished, however, with or without the match safe, and either tinned or black.

The Glover Lightning Mixing Spoon.

The tinned iron spoon shown herewith is 10 inches long and is provided with teeth along the right hand side of the bowl. It is particularly designed for mixing when butter and lard are used in making pastry. The teeth



The Glover Lightning Mixing Spoon.

are intended to cut up the shortening and mix it with the flour, instead of the cook being obliged to cut it with a knife and mix it with the hands. The spoon may also be used for all general purposes as a kitchen spoon, such as mixing batter, bread, eggs, stirring and dipping, &c., as the teeth are located so as not to interfere with the spoon's general usefulness. It is put on the market by J. Allen Glover, Ardsley, N. Y.

Niagara Ties or Bonds.

The veneer tie or bond shown in Fig. 1 is designed for securing brick to the frame in brick veneer buildings. The ties are made of best galvanized steel, 7-16 inch



Fig. 1.—Niagara Veneer Tie or Bond.

wide, and reach 3½ inches into the brick wall free from the sheathing. They are fastened to the sheathing rapidly and easily with common roofing or other nails, for which there is a hole punched. Bedded in mortar, it is remarked, they are practically immovable, as top, bottom and sides resist movement, uniting the frame, sheathing and brick wall into practically one strong and solid body. The ties weigh about 3 pounds to the gross, and are packed 3 gross in wooden boxes, with locked and glued corners and sliding covers, making them con-

venient for jobbers and retailers to handle, and in desirable packages for builders to use on the wall. The wall tie or brick bond shown in Fig. 2 is ¾ inch wide and 7½ inches long, made of best steel and galvanized, and guaranteed to have an average breaking strain of

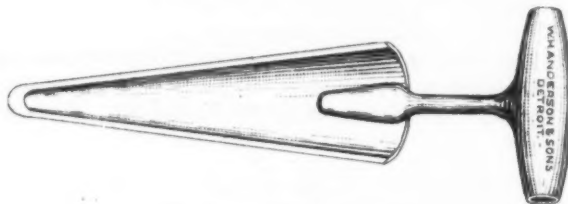


Fig. 2.—Niagara Wall Tie or Brick Bond.

800 pounds each. They may be placed lengthways around openings and crossways throughout the wall. It is stated that, bedded in a wall, ten of these ties represent a resistance of 8000 pounds to any tendency to spread, bulge, crack or swerve. The ties weigh about 4½ pounds per gross, packed 3 gross in wooden boxes, with locked and glued corners and sliding covers. Both of these ties are offered by the Metal Stamping Company, Niagara Falls, N. Y.

The Anderson Cabbage Corer.

The cabbage corer shown herewith has a steel blade carefully sharpened, and is provided with a malleable



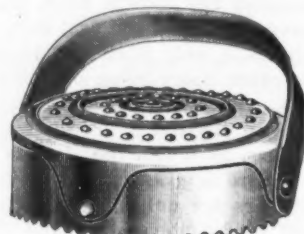
The Anderson Cabbage Corer.

handle securely riveted to the blade. It is designed for removing the hard cores from cabbage when making sauerkraut, also for use in hotels and restaurants for taking out cabbage cores before slicing. The corer is offered by W. H. Anderson & Sons, Detroit, Mich. The

corer weighs about 5½ pounds per dozen, packed one dozen in a box.

Ideal Curry Comb.

The combined curry comb and scraper illustrated in the accompanying cut is offered by the Metal Stamping Company, Niagara Falls, N. Y. It is made of best quality cold rolled steel, finished with bright colored enamels, with tin top in brass finish. By revolving the body within the handle the comb can be changed to a scraper and back again. As a scraper or rubber it may



Ideal Curry Comb.

be used to advantage for grooming a clipped, nervous or thin skinned animal, or for cleaning the legs or other irregular surfaces. The comb is referred to as being adapted for use with one comb in each hand, and as being self cleaning and durable.

Current Hardware Prices.

REVISED NOVEMBER 3, 1903

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33 1/2 @ 33 1/2 & 10% signifies that the

price of the goods in question ranges from 33 1/2 per cent. discount to 33 1/2 and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued June, 1903, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Abrasives—

Adhesive in Carborundum: 1/2 ton \$90@100
Crystal. 1/2 ton \$120@140
See also Emery.

Adjusters, Blind—

Domestic, per doz. \$3.00. 33 1/2
North's. 10%
Zimmerman's—See Fasteners, Blind.

Window Stop—

Teet's Patent. 35%
Taplin's Perfection. 5%

Ammunition—See Caps, Cartridges, Shells, &c.

Anvils—American—

Arnold Hammer, Wrought. 8 1/2 @ 8 3/4
Steel faces, Trenton. 10 @ 10 1/2
Eagle Anvils. 7 1/4 @ 7 3/4
Hay-Budden, Wrought. 9 @ 9 1/2
Horseshoe brand, Wrought. 9 @ 9 1/2

Imported—

Peter Wright & Sons. 10 @ 10 1/2

Anvil, Vise and Drill—

Millers Falls Co., \$18.00. 15 & 10%

Apple Parers—See Parers, Apple, &c.

Aprons, Blacksmiths'—

Mail Bros. & Co. 30 & 35%

Augers and Bits—

Cont. Loose Spur. 70 & 110 @ 75%
Curry Machine Augers. 65 & 70%
Cot Bits, 12-in. twist. 60 @ 60 1/2
Jennings' Pattern. 50 & 100 @ 50%
Ford's Auger and Car Bits. 40 & 5%
Foster's Pat. Auger Bits. 25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list 25 & 10%
No. 30. R. Jennings' list. 40 & 7 1/2 @ 10%
Russell Jennings. 25 & 10%
L'Hommedieu Car Bits. 15 & 10%
Mayhew's Countersink Bits. 45%
Pug's Black. 20%
Pug's enameled Pattern. 35%
Snell's Auger Bits. 60%
Snell's Bell Hangers' Bits. 50 & 10%
Snell's Car Bits, 12-in. twist. 60%
Wright's Jennings Bits (H. Jennings' list). 50%

Bit Stock Drills—

See Drills, Twist.

Expansive Bits—

Clark's small, 1 1/2; large, 2 1/2. 50 & 10%
Clark's Pattern, No. 1, per doz. 2 1/2;
No. 2, \$1.80. 50 & 10%
Ford's, Clark's Pattern. 50 & 10%
C. E. Jennings & Co., Steer's Pat. 25 & 10%
Swan's. 60%

Gimlet Bits—

Common Gimlet Cut. gro. \$2.75 to \$3.00
German Pattern. gro. \$4.00 @ 4.25

Hollow Augers—

Bowney Pattern, per doz. \$10.00 @ 11.00
Ames. 25 & 10%
New Patent. 25 & 10%
Universal. 20%
Wood's Universal. 25%

Ship Augers and Bits—

Ford's. 40%
Snell's. 40%
Watrous'. 33 1/2 & 10%
C. E. Jennings & Co.:
L'Hommedieu's. 15 & 10%
Thomson's. 33 1/2 & 10%

Awl Hafts, See Hafts, Awl.

Awls—

Hand Awls:
Handled. gro. \$2.75 @ 3.00
Unhandle, Shouldered. gro. 65 @ 60%
Unhandle, Patent. gro. 60 @ 70%
Peg Awls:
Unhandle, Patent. gro. 51 @ 51 1/2
Unhandle, Shouldered. gro. 65 @ 70%
Serrated Awls:
Handled, Common. gro. \$5.00 @ 4.00
Handled, Socket. gro. \$11.50 @ 12.00
Barrowed. 40%

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

First quality, factory brands. \$5.50
First quality, jobbers' brands. \$5.00 @ 5.25
Second quality. \$4.50 @ 4.75

Axle Grease—See Grease, Axle.

Axles—

Concord, Loose Collar. 4 1/2 @ 5 1/2
Concord, Solid Collar. 4 1/2 @ 5 1/2
No. 1 Common. 4 1/2 @ 5 1/2
No. 1, Com. New Style. 4 1/2 @ 5 1/2
No. 2, Solid Collar. 4 1/2 @ 5 1/2
Nos. 11 to 14. 4 1/2 @ 5 1/2
Nos. 15 to 18. 4 1/2 @ 5 1/2
Nos. 19 to 22. 4 1/2 @ 5 1/2

Boxes, Axle—

Common and Concord, not turned. 15. 4 1/2 @ 5 1/2
Common and Concord, turned. 15. 4 1/2 @ 5 1/2
Half Patent. 16. 9 @ 9 1/2

Balances—Sash—

Caldwell new list. 50%
Pullman's. 60%

Spring—

Spring Balances. 60 @ 60 1/2 & 5%

Chatillon's:
Lighting Balances. 40 & 10%
Straight Balances. 40%
Circular Balances. 50%
Large Dial. 30%
Penitence. 30%

Barb Wire—See Wire, Barb.

Bars—Crow—

Steel Crowbars, 10 to 40 lb., per lb. 3 @ 3 1/2

Towel—

No. 10 Ideal, Nickel Plate. per gro. \$8.50

Beams, Scale—

Scale Beams, List Jan. 12, '82. 40 & 10%
Chatillon's No. 1. 30%
Chatillon's No. 2. 40%

Beaters—Egg—

Lightning Chain, per gro. \$15.00
National Mfg. Co.:
No. 1 Dover, Family size. \$7.00
No. 2 Dover, Hotel size. 14.00

Taplin Mfg. Co.: No. 60 Improved Dover. \$8.00 No. 75 Improved Dover. \$9.50 No. 100 Improved D. v. e. \$7.00 No. 102 Improved Dover, Tin'd. \$8.50 No. 150 Improved Dover, Hotel. \$15.00 No. 152 Imp'd Dover, Hotel, T'd. \$17.00 No. 200 Imp'd Dover Tumbler. \$8.50 No. 202 Imp'd Dover Tumbler, Tin'd. \$9.50 No. 300 Imp'd Dover Mammoth. \$25.00 Wonder (S. S. & Co.). per gro. net, \$6.00

Bellows—

Blacksmith, Standard List. 75 @ 75 & 5%

Blacksmiths'—

Inch. 3 1/2 3 3/4 3 1/2 3 3/4 3 1/2 3 3/4
Eac. \$3.50 3.75 4.25 4.50 5.35 6.15

Extra Length: Each. \$5.00 5.55 5.10 5.60 6.40 7.50

Molders—

Inch. 10 12 14
Doz. \$3.50 10.00 15.00

Hand—

Inch. 6 7 8 9 10
Doz. \$4.25 4.50 5.00 6.50 7.75

Bells—Cow—

Ordinary goods. 75 & 5 @ 75 & 10%
High grade. 70 & 10 @ 70 & 10 & 5%
Texas. 75 & 10%
Texas Star. 50%

Door—

Abbe's Gong. 45%
Barton Gong. 55%
Rome, R. & E. Mfg. Co.'s. 55 & 10%
Lever and Pull, Sargent's. 60 & 10 & 10%
Yankee Gong. 35%

Hand—

Hand Bells, Polished. 60 & 5 @ 60 & 10%
White Metal. 55 & 5 @ 55 & 10%
Nickel Plated. 30 @ 30 1/2 & 5%
Scales. 60 @ 60 & 10%
Cone's Globe Hand Bells. 30 @ 30 1/2 & 10%
Silver Chime. 30 @ 30 1/2 & 10%

Miscellaneous—

Farm Bells. 10 @ 2 1/2 & 4%
Steel Alloy Church and School. 60 @ 60 & 5%
American Tube & Stamp'g Co. Gongs. 75%
Table Call Pe. 15. 30 & 5 @ 30 & 10%
Trip Gong Bells. 35 & 10 @ 60%

Belting—Rubber—

Agricultural (Low Grade). 75 @ 75 & 5%
Common, Standard. 70 @ 70 & 10%
Standard. 65 @ 70%
Extra. 60 & 5 @ 60 & 10%
High Grade. 50 & 5 @ 50 & 10%
Boston Belting Co.:
Seamless Stitched Imperial. 45 & 5%
Boston. 50 & 5%
Niagara. 60 & 5%

Leather—

Extra Heavy, Short Lap. 60 @ 60 & 5%
Regular Short Lap 60 & 10 @ 60 & 10%
Standard. 70 @ 70 & 5%
Light Standard. 70 @ 10%
Cut Leather Lacing. 60 & 10%
Leather Lacing Sides, per sq. ft. 15c

Bench Stops—See Stops, Bench

Benders and Upsetters, Tire—

Detroit Perfected Tire Bender. 40%
Green River Tire Benders and Upsetters. 20%
Detroit Standard's Lightning Tire Upsetters, No. 1, \$4.25; No. 2, \$7.25; No. 3, \$10.50; No. 4, \$16.50. No. 5, \$20.50.

Bicycle Goods—

John S. Leng's Son's 1903 list:
Chain. 50%
Parts. 50%
Spokes. 50%
Tubes. 60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—
See Augers and Bits.

Blocks—Tackle—

Common Wooden. 70 & 10 @ 75 & 5%
Hollow Steel Blocks, with Ford's Patent Sheaves. 50 & 10%
Lane's Patent Automatic Lock and Junior. 30%
Stowell's Novelty, Mal. Iron. 50 & 10%
St. & W. Co. Peck's Patent 60 & 10 @ 65%

Beards, Stove—

Zinc, Crystal, &c. 30 & 10 @ 40 & 10%

Boils—

Carriage, Machine, &c.—

Common Carriage. 70 & 10 @ 70 & 10%
Phila. Eagle, \$3.00 list May 24, '99. 80 & 80 & 5%
Bolt Ends list Feb. 14, '95. 65 & 5 @ 65 & 10%
Machine, list Oct. 1, '99. 70 & 70 & 5%
Machine with C & T. Nuts. 60 & 10 @ 60 & 10%

Door and Shutter—

Cast Iron Barrel, Round Brass Knob:
Inch. 3 1/2 5 6 8
Per doz. \$0.26 .30 .39 .47 .65

Cast Iron Spring Foot: Inch. 6 8 10 Per doz. \$1.00 1.25 1.75

Cast Iron Chain, Flat, Japanned:
Inch. 6 8 10
Per doz. \$0.75 1.05 1.30

Cast Iron Shutter, Brass Knobs: Inch. 6 8 10 Per doz. \$0.57 .80 1.00

Wrt Barrel, Jap'd. 75 & 10 @ 75 & 10 & 10%
Wrought. 100 & 5 @ 100 & 10%
Wrought Flush. B. K. 50 & 10 @ 50 & 10%
Wrought Shutter. 40 & 10 @ 40 & 10%
Wrought Square Neck. 50 & 5 @ 50 & 10%
Wrought Sunk, Flush. 50 & 5 @ 50 & 10%
Ives' Patent Door. 60%

Stove and Plow—

Plow. 60 @ 60 & 5%
Store. 30 @ 30 & 10%

Tire—

Common. 72 1/2 @ 72 1/2 & 10%
Norway Iron. 80 @ 80 & 5%
American Screw Company:
Norway Phila. list Oct. 16, '94. 80%
Eagle Phila. list Oct. 16, '94. 82 1/2%
Bay State, list Dec. 28, '99. 72 1/2%

Franklin Moore Co.: Norway Phila. list Oct. 16, '94. 80% Eagle Phila. list Oct. 16, '94. 82 1/2% Eclipse, list Dec. 28, '99. 72 1/2% Russell, Burdall & Ward Bolt & Nut Co. Empire, list Dec. 28, '99. 72 1/2% Norway Phila. list Oct. 16, '94. 80% Union Nut Co.: Tire Bolts. 72 1/2%

Borers, Tap—

Borers Tap, Ring, with Hand'r:
Inch. 1 1/2 1 3/4 1 1/2 2
Per doz. \$5.30 5.00 5.75 7.25

Inch. 2 1/2 2 3/4 2 1/2
Per Doz. \$8.65 11.50

Enterprise Mfg. Co., No. 1, \$1.35; No. 2, \$1.05; No. 3, \$2.50 each. 25%

Boxes, Mitre—

C. E. Jennings & Co. 25 & 10%
Langdon. 15 & 10%
Perfection. per doz. \$ 6.00
Schatz. 40%

Braces—

NOTE.—Most Braces are sold at net prices.

Common Ball, American. \$1.15 @ 1.25

Barber's. 60 & 10 @ 60 & 10%
Fray's Genuine Spofford's. 60%
Fray's No. 70 to 120, 81 to 143, 207 to 414. 60%
C. E. Jennings & Co. 50 & 5 @ 50 & 10%
Mayhew's Ratchet. 60%
Mayhew's Quick Action Hay Patent. 50%
Millers Falls Drill Braces. 25 & 10%
P. S. & W. Co. Peck's Patent 60 & 10 @ 65%

Brackets—

Wrought Steel. 80 @ 80 & 5%
Bradley's Wire Shelf:
Full cases. 85%
Broken cases. 80 & 10 @ 10%
Griffin's Pressed Steel. 80%
Griffin's Folding Brackets. 70 & 10%
Stowell's 1st shelf. 75%
Stowell's Sink. 30%

Bright Wire Goods—See Wire and Wire Goods.

Broilers—

Wire Goods Co. 75 & 75 & 10%

Buckets, Well and Fire—

See Pails

Bucks Saw—

Hoosier. per gro. \$38.00

Bull Rings—See Rings, Bull.

Butts—Brass—

Wrought list Sept. '96. 30 @ 30 & 10%
Cast Brass, Tiebout's. 50%

Cast Iron—

Fast Joint, Broad. 50 @ 50 & 10%
Fast Joint, Narrow. 50 @ 50 & 10%
Loose Joint. 60 & 10 @ 60 & 10%
Loose Pin. 70 & 5 @ 70 & 10%
Mayer's Hinges. 70 & 5 @ 70 & 10%
Parliament Butts. 70 & 5 @ 70 & 10%

Wrought Steel—

Table and Buck Flaps. 75%
Narrow and Broad. 75%
Inside Blind. 75 & 10%
Loose Pin. 75 & 10%
Loose Pin, Ball and Steeple Top. 6 3/4%
Japanned, Ball Tie Butts. 7 1/2%
Bronzed Wrt. Nar. and Inside Blind Butts. 75 & 10% Extra 10 @ 10 & 10%

Cages, Bird—

Hendryx, Brass:
3000, 5000, 1100 series. 50%
1200 series. 33 1/2%
200, 300, 600 and 900 series. 40 & 10%
Hendryx Bronze:
700, 800 series. 40 & 10%
Hendryx x Enameled. 40 & 10%

Calipers—See Compasses.

Calks, Toe and Heel—

Hunt. 1 prong. per lb. 1.60 & 1/2
Sharp, 1 prong. per lb. 1.50 & 1/2
Perkins' Sharp Toe. cents. 10 & 1/2
Perkins' Sharp Toe. cents. 10 & 1/2

For 9—

Base accounts Aug. 1, 1899, list:	
Hammer, 1 line.....	50¢10¢5%
Hammer, 2 line.....	50¢10¢5%
Hammer, 3 line.....	50¢10¢5%
Hammer, 4 line.....	50¢10¢5%
Hammer, 5 line.....	50¢10¢5%
Hammer, 6 line.....	50¢10¢5%
Hammer, 7 line.....	50¢10¢5%
Hammer, 8 line.....	50¢10¢5%
Hammer, 9 line.....	50¢10¢5%
Hammer, 10 line.....	50¢10¢5%
Hammer, 11 line.....	50¢10¢5%
Hammer, 12 line.....	50¢10¢5%
Hammer, 13 line.....	50¢10¢5%
Hammer, 14 line.....	50¢10¢5%
Hammer, 15 line.....	50¢10¢5%
Hammer, 16 line.....	50¢10¢5%
Hammer, 17 line.....	50¢10¢5%
Hammer, 18 line.....	50¢10¢5%
Hammer, 19 line.....	50¢10¢5%
Hammer, 20 line.....	50¢10¢5%
Hammer, 21 line.....	50¢10¢5%
Hammer, 22 line.....	50¢10¢5%
Hammer, 23 line.....	50¢10¢5%
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Hammer, 95 line.....	50¢10¢5%
Hammer, 96 line.....	50¢10¢5%
Hammer, 97 line.....	50¢10¢5%
Hammer, 98 line.....	50¢10¢5%
Hammer, 99 line.....	50¢10¢5%
Hammer, 100 line.....	50¢10¢5%

Fountains, Stock—

Double Dewey doz. \$13.00

Frames—Saw—

White, 18" x 12" Bar, per doz. 75¢ @ 80¢

Red, 18" x 12" Bar, per doz. \$1.00 @ 1.15

Red, Double Brace, per doz. \$1.40 @ 1.50

Freezers, Ice Cream—

18" x 12" x 12" doz. \$1.15

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Riveting and Tinner's—

Sargent's C. S. New List..... 40%

Heavy Hammers and Sledges—

Under 3 lb..... 1b 5 c

3 to 5 lb..... 1b. 4 c 70¢10¢75

Over 5 lb..... 1b. 30 c 10¢

Wilkinson's Smitas..... 94¢10¢10

Handles—

Agricultural Tool Handles—

Axe, Pick, etc..... 45¢50¢55

Hoe, Rake, etc..... 45¢50¢55

Fork, Shovel, Spade, etc..... 45¢50¢55

Long Handles..... 45¢50¢55

D Handles..... 45¢50¢55

Cross-Cut Saw Handles—

Atkins..... 40¢50¢55

Champion..... 45¢45¢102

Disston..... 50%

Mechanics' Tool Handles—

Auger, assorted..... gro. \$2.50 @ \$2.75

Bradawl..... gro. \$1.65 @ \$1.75

Chisel Handles:

Apple Tanged Firmer, gro. ass'd.

\$2.00 @ \$2.75; large, \$2.35 @ \$3.50

Hickory Tanged Firmer, gro. ass'd.

\$2.50 @ \$2.75; large, \$3.15 @ \$3.25

Apple Socket Firmer, gro. ass'd.

\$2.25 @ \$2.50; large, \$3.00 @ \$3.25

Hickory Socket Firmer, gro. ass'd.

\$2.00 @ \$2.25; large, \$2.25 @ \$2.50

Hickory Socket Framing, gro. ass'd.

\$3.00 @ \$3.25; large, \$3.25 @ \$3.50

File, assorted..... gro. \$1.25 @ \$1.35

Hammer, Hatchet, etc..... 50%

Hand Saw, Varied, doz. 60¢70¢

Not Varied..... 55¢60¢

Plane Handles—

Jack, doz. 55¢; Jack Bolted..... 55¢60¢

Fore, doz. 35¢35¢; Fore, Bolted..... 70¢75¢

Chapin-Stephens Co.

Carving Tool..... 40¢40¢102

Chisel..... 65¢65¢102

File and Awl..... 65¢65¢102

Saw and Plane..... 40¢40¢102

Screw Driver..... 40¢40¢102

Milers' Fall Adj. and Hatchet Auger..... 15¢10¢

Nicholson Simplicity File Handle..... 40¢40¢102

per doz. \$1.50

Hangers—

Barn Door, New Pattern, Round

Groove, Regular:

Inch..... 3 4 5 6 8

Single Doz. \$0.90 1.25 1.60 1.95 2.50

Barn Door, New England Pattern,

Check Back, Regular:

Inch..... 3 4 5 6 8

Single Doz. \$1.30 1.85 2.50 3.00

Aluth Mfg. Co.

Reliable..... per doz. \$15.00

Chicago Spring Butt Co.

Prior..... 25%

Oscillating..... 25%

Big Twin..... 25%

Chisholm & Moore Mfg. Co.

Baggage Car Door..... 50%

Elevator..... 30%

Railroad..... 50%

Croner Mfg. Co.

Toos Axle..... 40%

Roller Bearing..... 60¢10¢

Lamb Bros. Co.

Parlor Ball Bearing..... \$4.15

Parlor Standard..... \$5.35

Parlor New Model..... \$3.85

Parlor New Champion..... \$2.25

Barn Door, Standard..... 50¢10¢102

Covered..... 50¢10¢102

Saw..... 50¢10¢102

Lawrence Bros.

Advance..... 40%

Cleveland..... 40¢10¢

Crown..... 60%

Giant..... 50¢10¢

New York..... 60%

Peerless..... 60¢10¢

Sterling..... 60%

Swing..... 60%

Union, No. 44, \$5.00; No. 45, \$7.00;

No. 46, \$9.00.

McKinney Mfg. Co.

No. 1, Special, \$15..... 60¢10¢

No. 2, Standard, \$18..... 60¢10¢

Hinged Hanger, \$15..... 50%

Meyers' stayon Hangers..... 50%

C. S. Smith Mfg. Co.

Lundy Parlor Door..... 50¢10¢

Monarch Barn Door..... 60¢10¢

Never Jam Hinge..... 50¢10¢

Peenleys..... 60¢10¢

Perfectum..... 50%

Phoenix..... 70¢5%

Wagner's Adjustable..... 70¢5%

Elevator.....	40%
Express.....	30%
Freight Car Door.....	60%
Interstate.....	40&10%
Lundy Parlor Door.....	50&10%
Macle.....	60%
Matchless.....	60&10%
Nansen.....	70&5%
Parlor Door.....	50&10%
Railroad.....	50&10%
Reinforced Door.....	60%
Street Car Door.....	50%
Steel, Nos. 300, 404, 500.....	50&10%
Underwriter's Flr. Door.....	40%
Wild West Warehouse Door.....	50%
Z-nth f r Wood Track.....	50&10%
A. L. Swett Iron Works:	
Hylo.....	60&10%
Perfection.....	50&10%
Pilot.....	60%
Taylor & Bogley & Co.'s Kidder's	
Roller Bearing.....	50&15&10&5%
Wileox Mfg. Co.	
Bike Roller Bearing.....	60&10%
C. J. Roller Bearing.....	60&10%
Cycle Ball Bearing.....	60%
Dwarf Ball Bearing.....	60%
Ives, Wood Track.....	60&10%
L.T. Roller Bearing.....	60&10&5%
New Era Roller Bearing.....	50&10%
O. K. Roller Bearing.....	60&10&5%
Prindle, Wood Track.....	60%
Richards' Wood Track.....	60%
Richards' Steel Track.....	50&10%
Spencer Roller B'aring.....	60&10%
Tandem Nos. 1 and 2.....	60%
Underwriters' Roller Bearing.....	40%
Velvet.....	30%
Wileox Auditorium Ball Bearing.....	30%
Wileox Barn Trolley No. 123.....	40%
Wileox Elev. Door, Nos 112 and 123.....	50%
Wileox Elev. Door, No. 132.....	40%
Wileox Fire Trolley, Roller	
Bearing.....	40%
Wileox Le Roy Noiseless Ball	
Bearing.....	40%
Wileox New Century.....	50&10&10%
Wileox O. K. Steel Track.....	50%
Wileox O. K. Trolley.....	40%
Wileox Trolley, Barn Trolley.....	40%
Wileox Wildeman Narrow Gauge.	
Ball Bearing.....	40%
For Track, see Rail.	

Wire Goods Co:

Acme.....	60&105
Chief.....	70&
Crown.....	70&105
Czar.....	60&
V Brace.....	70&105
Czar Harness.....	50&105

Wrought Iron—

Box, 6 in., per doz.	\$1.00; 8 in., \$1.25;
10 in., \$2.50.	

Cotton..... doz. \$1.05 @ 1.25

Wrought Staples, Hooks, &c.—

Miscellaneous—

Bush, Light, doz. \$5.50; Medium, \$6.00; Heavy, \$6.50

Grass.....Nos. 1 2 3 4

Best.....\$1.50 1.75 2.00

Common.....\$1.30 1.50 1.60

Potato and Manure.....60¢ 15¢

Wh. fletree.....lb. 5¢ @ 6¢

Hooks ara Eyes.....60¢ 10¢ 10¢ 70¢

Malleable Iron.....70¢ 5¢ 70¢ 10¢

Covert Saddlery Works' Self Locking

Gate and Door Hook.....60¢

Ft. Madison Out-Cut Corn Hooks,

per doz. \$5.25 net

Bench Hooks—See Bench Stops.

Corn Hooks—See Knives, Corn.

Horse Nails—See Nails, Horse

Horse Shoes—

See Shoes, Horse.

Hose Rubber—

Garden Hose, 3/4-inch:

Competition.....ft. 4¢ @ 5 c

3-ply Standard.....ft. 6¢ @ 7 c

4-ply Standard.....ft. 7¢ @ 8 c

5-ply extra.....ft. 8¢ @ 9 c

6-ply extra.....ft. 10¢ @ 10 1/2 c

Cotton Garden, 3/4-in., coupled:

Low Grade.....ft. 6 @ 7 c

Fair quality.....ft. 8 @ 9 c

Irons— Sad—

From 4 to 10.....lb. 3¢ @ 4 1/2 c

B. B. Sad Irons.....lb. 3 1/2 @ 3 3/4 c

Chinese Laundry.....lb. 4 1/2 @ 5 c

Chinese Sad.....lb. 4 @ 4 1/2 c

Mrs. Potts, per set:

Nos. 50 55 60 65

JapTops70¢ 81 75¢ 78 86¢ 91 53¢ 88

TinaTops70¢ 84 76¢ 81 89¢ 94 86¢ 91

New England Pressing, lb. 3 1/2 @ 4 c

Pinking Irons.....doz. 50¢ @ 60 c

Soldering—

Soldering Coppers 3/4 and 3/8.....20¢ @ 21 c

1 1/4 and 2.....22¢ @ 23 c

Jacks, Wagon—

Covert Mfg. Co.:

Auto Screw.....80¢ 5¢

Steel.....45¢ 2¢

Covert's Saddlery Works':

Daisy.....60¢ 10¢

Victor.....60¢ 10¢

Lockport.....50¢

Lane's Steel.....30¢ 10¢

Kettles—

Brass, Spun, Plain.....20¢ @ 25 c

Enameled and Cast Iron—See Ware.

Hollow.

Knives—

Butcher, Kitchen, &c.—

Foster Bros' Butcher, &c.....30¢

Smith & Hemenway Co.....40¢ 10¢

Wilkinson Shear & Cutlery Co.....50¢

Hay and Straw—See Hay Knives.

Corn—

Withington Acme, per doz., \$2.65; Dent,

\$2.75; Adj. Serrated, \$2.20; Serrated,

\$2.10; Yankee No. 1, \$1.50;

Yankee No. 2, \$1.15.

Drawing—

Standard List.....70¢ 5¢ @ 70¢ 10¢

Brayley's.....35¢

C. E. Jennings & Co. Nos. 45, 46, 60¢ 10¢

Jennings & Griffin, No. 51, 52, 60¢ 10¢

Swan's.....70¢ 10¢ 20¢

Watrous.....10¢ 5¢ 10¢

L. & J. J. White.....20¢ 5¢ @ 25 c

Hay and Straw—

Lightning.....per doz. \$6.50 @ 7.00

Iwan's Sickle Edge.....per doz. \$10.00

Iwan's Serrated.....per doz. \$10.00

Maine.....per doz. \$8.50

Mincing—

Buffalo.....per gro. \$13.00

Miscellaneous—

Farriers.....doz. \$3.00 @ 5.25

Wostenholm's.....per doz. \$3.00 @ 3.25

Knobs—

Base, 2 1/2-inch, Birch, or Maple,

Rubber tip, gro.....\$1.10 @ 1.15

Carriage, Jap, all sizes, gro. 10¢ @ 15 c

Door, Mineral.....doz. 65¢ 70 c

Door, Por. Jap d.....doz. 70¢ 75 c

Door, Por. Nickel.....doz. \$2 05 @ 2.15

Bardley's Wood Door, Shutter, &c. 10¢

Picture, Sargent's.....60¢ 10¢ 10¢

Lacing Leather—

See Belting Leather—

Ladders, Step, Etc.—

Lane's Store.....25¢

Myers Noiseless Store Ladders.....50¢

Ladies' Melting—

L. & G. Mfg. Co., Low List.....25¢

P. S. & W.....50¢

Reading.....60¢

Sargent's.....40¢ 10¢

Lanterns—

Regular Tubular No. 0, doz. \$1.55 @ 1.75

Lift Tubular, No. 0, doz. \$1.75 @ 1.95

Hinge Tubular, No. 0, doz. \$1.75 @ 1.95

Other Styles.....40¢ 10¢ @ 10¢ 10¢

Bull's Eye Police—

No. 1 2 1/4 inch.....\$2 50 @ 2.75

No. 2, 3 inch.....\$2.75 @ 3.00

Lasts and Stands, Shoe—

Stowell's Atlas, Malleable Iron.....50¢

Stowe's Badger, Cast Iron.....50¢

Latches—

Thumb—

Roggin's Latches, with screw, doz. \$5.00 @ 5.00

Leaders, Cattle—

Small.....doz. 55¢; large, 60¢

Covert Mfg. Co.....15¢ 2¢

Lifters, Transom—

R. & E.....33¢ 2¢

Lines—

Wire Clothes, Nos. 18 19 20

100 feet.....\$2.20 2.00 1.65

75 feet.....\$1.80 1.70 1.30

Samson Cordage Works:

Solid Braided Chalk, No. 0 to 3.....40¢

Silver Lake Braided Chalk, No. 0, 60¢; No. 1, 60¢; No. 2, 70¢; No. 3, 75¢.

Annisson Waterproof Clothes, 50 ft.,

gro.: \$24.00; Gilt Edge, \$22.00; Air Line,

\$23.00; Acme, \$17.00; Alabama, \$16.00;

Empire, \$17.00; Advance, \$14.00; All-

ston, \$13.00; Calhoun, \$11.00; Orford,

\$20.00; Albemarle, \$15.00; Eclipse,

\$12.50; Chicago, \$11.00; Standard,

\$10.00; Columbia, \$9.00.

Locks— Cabinet—

Cabinet Locks.....33 1/2 @ 33 1/2 7 1/2

Door Locks, Latches, &c.—

[Net prices are very often made on

these goods.]

Reading Hardware Co.....50¢

R. & E. Mfg. Co.....40¢

Sargent & Co.....40¢ 10¢

Stowell's Steel Door Latches.....50¢

Elevator—

Stowell's.....50¢

Padlocks—

Wrought Iron.....75¢ 10¢ 5¢ @ 80¢ 5¢

R. & E. Mfg. Co. Wrt. Steel and Brass,

75¢ @ 75¢ 10¢

Sash, &c.—

Ives' Patent.....62 1/2 c

Bronze and Brass.....50¢

Crescent.....50¢

Iron.....62 1/2 c

Wrought Bronze and Brass.....55¢

Wrought Steel.....50¢

Reading.....net 50¢

Machines— Boring—

Com., Upright, Without Augers.....\$2.00

Com., Angular, Without Augers.....\$2.25

Without Augers.

R. & E. Mfg. Co.: Upright, Angular,

Improved No. 3, 4, 25 No. 1 \$5.00

Improved No. 4, 3, 75 No. 2, 3.38

Improved No. 5, 2, 75

Jennings' No. 4, 3, 15 No. 1, 3.50

Jennings' No. 5, 2, 15

Snell's, Rice's Pat. 2.50 2.75

Fence—

Williams' Fence Machines.....each, \$5.50

Holsting—

Moore's Anti-Friction Differential Pul-

ley Block.....30¢

Moore's Hand Holst, with Lock Brake, 20¢

Ice Cutting—

Chandler's.....15¢ 10¢

Washing—

Boss Washing Machine Co. Per doz.

Boss No. 1; Boss Rotary.....\$7.50

Boss No. 7; Dietz Rotary.....\$4.00

Champion Rotary; Banner No. 1.....\$4.00

Standard Champion No. 1.....\$4.00

Standard Perfection.....\$3.50

Cint Square Western.....\$3.00

Uneda American, Round.....\$2.90

Mallets—

Hickory.....45¢ 5¢ @ 50¢

Lignumvite.....45¢ 5¢ @ 50¢

Tinnars', Hickory and Applewood,

doz.....50¢ @ 55 c

Mats— Door—

Elastic Steel (W. G. Co.).....10¢

Mattocks—

See Picks and Mattocks.

Milk Cans—See Cans, Milk

Mills— Coffee, etc.—

Enterprise Mfg. Co.....25¢ 30¢

National, List Jan. 1, 1902.....30¢

Parker's Columbia & Victoria.....50¢ 10¢ 90¢

Parker's Box and Side.....50¢ 10¢ 90¢

Sun, No. 108, 1 lb mill.....per doz. \$3.00

Swift, Lane Bros Co.....30¢

Mowers, Lawn—

Net prices are generally quoted.

Cheap.....all sizes, \$1.90 @ 1.95

Good.....all sizes, \$2.25 @ 2.50

High Grade 4, 10 12 14 16-inch

10 12 14 16 18 20

Continental.....10¢ 5¢

Great American.....70¢

Great American Ball Bearing, new list, 70¢

Quaker City.....70¢

Pennsylvania.....70¢

Pennsylvania, Jr., Ball Bearing.....60¢ 2¢

Pennsylvania Golf.....50¢

Pennsylvania Pony.....30¢ 5¢

Pennsylvania Horse.....40¢ 5¢

Philadelphia:

Style M., S. C. E. T.....70¢ 10¢

Style A, all Steel.....60¢ 10¢

Style E, High Wheel.....70¢ 10¢ 5¢

Drexel and Gold Coin, low list.....50¢ 5¢

Nails—

Cut and Wire. See Trade Report.

Wire Nail and Brads, Papered.

List July 20, 1899.....85¢ 85¢ 10¢

Hungarian, Finishing, Upholster-

ers', &c. See Tacks.

Horse—

Nos. 7 8 9 10

A. C.....25¢ 23¢ 22¢ 21¢ 21¢.....40¢ 5¢

Ausable.....24¢ 22¢ 21¢ 21¢ 21¢.....50¢ 10¢

C. B. K.....25¢ 25¢ 22¢ 21¢ 21¢.....40¢

Champin.....25¢ 25¢ 25¢ 24¢ 23¢.....40¢

Clinton.....10¢ 1 1/4 1 1/4 1 1/4 1 1/4.....10¢ 5¢

Maud S.....25¢ 25¢ 22¢ 21¢ 21¢.....50¢

Putnam.....23¢ 21¢ 20¢ 19¢ 18¢.....35¢ 4¢

Putnam Cold Roll 18¢ 17¢ 16¢.....10¢ 10¢

American, Nos. 5 to 10.....10¢ 9¢ 8¢

Neonset.....Nos. 5 to 10.....10¢ 9¢ 8¢

Jobbers' special brands, per lb. 8¢ 8 1/2 c

Picture

1 1/2 2 2 1/2 3 3 1/2 in.

Brass Head.....10¢ 60¢ 70¢ 95¢ 1.00 gro.

Por. Head.....1.10 1.10 1.10.....gro.

Nippers, See Pliers and Nippers.

Nuts—

Cold Punched: Off list.

Mfrs. or U. S. Standard.

Square, plain.....\$1.90 @ 5.00

Hexagon, plain.....\$2.50 @ 5.30

Square, C. T. & R.....\$2.10 @ 5.20

Hexagon, C. T. & R.....\$2.70 @ 4.30

Hot Pressed:

Mfrs., U. S. or Nar, Gauge Stand'd.

Square Blank.....\$3.50 @ 5.30

Hexagon Blank.....\$6.00 @ 6.50

Square Tapped.....\$5.60 @ 5.70

Hexagon Tapped.....\$6.20 @ 6.50

Oakum—

Best or Government.....lb. 6 1/4 c

Navy.....lb. 4 1/2 c

U. S. Navy.....lb. 5 1/4 c

Plumbers' Spun Oakum.....23¢

In carload lots 1/4 lb. off f.o.b. New

York.

Oil Tanks—See Tanks, Oil.

Brass and Copper.....65¢ @ 65¢ 10¢

Tin or Steel.....70¢ 10¢ 75¢

Zinc.....75¢ @ 75¢ 10¢

Chase or Paragon:

Stanley's Duplex..... 20@20&10&10%
Woods' Extension..... 33@44

Poachers, Egg-

Buffal. Steam Egg Poachers, # doz.
No. 1, 0; No. 2, # .00; No. 3,
.00; No. 4, #1.2 0..... 504

Points, Chaziers'-

Bulk and 1 lb. papers..... lb. 8 1/2c@8 3/4c
4 lb. papers..... lb. 8 1/2c@8 3/4c
1/2 lb. papers..... lb. 9 c@9 1/4c

Pokes, Animal-

Fr. Madison Hawkeye..... # doz. \$3.25
Fr. Madison Western..... # doz. \$4.00

Police Goods-

Manufacturers' Lists..... 25@25&5%
Towers..... 25%

Polish-Metal-

Prestone Liquid, No. 1 (1/2 pt.), # doz.
\$4.00; No. 2 (1 qt.), \$9.75..... 40%
Prestone Paste..... 40&10%
George William Hoffman:

U. S. Metal Polish Paste, 3 oz. boxes, #
doz. 20¢; # gr. \$4.50; 1/2 lb. boxes, #
doz. \$1.25; 1 lb. boxes, # doz. \$2.25;
U. S. Liquid, 8 oz. cans, # doz. \$1.25;
gr. \$1.20.

Barkkeepers' Friend Metal Polish, # doz.
\$1.75; # gr. \$18.00.

Wynn's White Silk, 1/2 pt. cans, #
doz. \$2.00

Stove-

Black Eagle Benzine Paste, 5 lb. cans..... # 10¢

Black Eagle, Liquid, 1/2 pt. cans, # doz. 75¢

Black Jack Paste, 1/2 lb. cans, # gr. \$9.00

Black Kid Paste, 1/2 lb. cans, # each, \$0.65

Ladd's Black Beauty, gr. \$10.00..... 50%

Joseph Dixon's, # gr. \$5.75..... 10%

Lixon's Plumbago..... # 8¢

Firestone..... # gr. \$2.50

Gen. # gr. \$4.50..... 10%

Japan..... # gr. \$3.50

Jet Black..... # gr. \$3.50

Peelless Iron Enamel, 10 oz. cans..... # doz. \$1.50

Wynn's:

Black Silk, 5 lb. pail..... each 70¢

Black Silk, 1/2 lb. box..... # doz. \$1.00

Black Silk, 5 oz. box..... # doz. \$0.75

Black Silk, 1/2 pt. liq..... # doz. \$1.00

Poppers, Corn-

1 qt. Square..... gro. \$2.00

1 qt. Round..... gro. \$10.00

1/2 qt. Square..... gro. \$1.00

2 qt. Square..... gro. \$1.00

Post Hole and Tree Augers and Diggers-

See also Diggers, Post Hole, &c.

Posts, Steel-

Steel Fence Posts, each, 5 ft., 4 1/2; 6
ft., 4 1/2; 6 1/2 ft., 4 1/2..... \$1.30

Steel Hitching Posts, each..... \$1.30

Potato Parers-

See Parers, Potato,

Pots- Glue-

Enamelled..... 40%

Tinned..... 35%

Powder-

In Canisters:

Duck, 1 lb. each..... 45¢

Fine Sporting, 1 lb. each..... 75¢

Rifle, 1/2 lb. each..... 15¢

Rifle, 1 lb. each..... 25¢

King's Smokeless:

Keg (25 lb bulk)..... \$0.50

Half Keg (12 1/2 lb bulk)..... \$3.50

Quarter Keg (6 1/4 lb bulk)..... \$1.90

Case 24 (1 lb cans bulk)..... \$9.50

Half case (1 lb cans bulk)..... \$4.50

King's Smokeless:

Shot Gun Rifle

Keg (25 lb bulk)..... \$12.00

Half Keg (12 1/2 lb bulk)..... 7.75

Quarter Keg (6 1/4 lb bulk)..... 3.25

Case 24 (1 lb cans bulk)..... 14.00

Half case 12 (1 lb cans bulk)..... 7.25

Robin Hood Smokeless Shot Gun..... 50&20%

Presses-

Fruit and Jelly-

Enterprise Mfg. Co..... 20@25%

Sensitive..... 35%

2 qt., \$2.00; 4 qt., \$4.00; 10 qt., \$6.00 each.

Seal Presses-

Morrill's No. 1, per doz. \$20.00..... 50%

Pruning Hooks and Shears-See Shears.

Pullers Nail-

Cyclops..... 50%

Dudley Improved Nail Puller..... 50%

Miller's Falls, No. 3, per doz. \$19.00..... 33&10%

Pearson No. 1, Cyclone Spike Puller..... each \$30.00..... 50%

Sash Pulleys-

Common Frame; Square or Round

End, per doz., 1 1/4 and 2 in., 10@10c

Auger Mortise, no Face Plate, per

doz., 1 1/4 and 2 in., 10@10c

Auger Mortise, with Face Plate, per

doz., 1 1/4 and 2 in., 10@10c

Acme..... 13 1/2 in., 16; 2 in., 10

Common Sense, 1 1/4 in., 16; 2 in., 10

2 in., 20¢.

Fox All-Steel, Nos. 3 and 7, 2 in., 50¢

Grand Rapids All-Steel Noiseless..... 50%

Ideal..... 70&5%

Niagara..... 13 1/2 in., 16; 2 in., 19¢

No. 26, Troy..... 13 1/2 in., 14; 2 in., 16 1/2¢

Star..... 13 1/2 in., 16; 2 in., 19¢

Tackle Blocks-See Blocks.

Pumps-

Cistern..... 60@6 1/2¢

Pitcher Spout..... 80@80&5%

Wood..... 50@50&10%

Pump Leathers-

Plunger and Lower Valve-Per gro.:

Inch..... 2 1/4 2 1/2 2 3/4 3 1/4 3 1/2 3 3/4 4

Inch..... 1.30 3.00 3.50 4.10 4.40

Plunger up Leathers-Per 100:

Inch..... 2 1/4 3 1/4 3 1/2 4 1/4 6.00

Barnes Dbl. Acting (low list)..... 50&10%

Contractors' Rubber Diaphragm No. 2

R. & L. Block Co..... \$16.00

Daisy Spray Pump..... # doz. \$7.20

Flint & Walling's Fast Mail (low list)..... 50%

Flint & Walling's Pitcher Spout..... 50%

National Specialty Mfg. Co., Measur-

ing, \$5.00..... 30%

Mechanical Sprayer..... \$7.30

Myer's Pumps, low list..... 50%

Myer's Power Pumps..... 50%

Myer's Spray Pumps..... 50%

Punches-

Saddlers' or Drive, good, doz. 65@70¢

Spring, single tube, good quality..... \$1.75@2.00

Revolving (tubes)..... doz. \$3.50@3.75

Bemis & Call Co.'s Cast Steel Drive..... 50%

Bemis & Call Co.'s Check..... 50%

Benard Spring Belt Punches..... 30%

Lodi Spring Belt Punches..... 50%

Morrill's No. 1 (A. B. C.), # doz., \$15.00..... 30%

No. 2, # doz. \$22.50..... 50%

Hercules, each \$7.50..... 50%

Niagara Hollow Punches..... 40%

Niagara Solid Punches..... 55&10%

Paragon Spring Belt Punches..... 50%

Steel Screw, B. & K. Mfg. Co..... 40%

Tinners' Hollow, P. S. & W. Co. 35&35&5%

Tinners' Solid, P. S. & W. Co., # doz.,

\$1.44..... 60%

Rail- Barn Door, &c.-

Cast Iron, Barn Door; Flange Screw

Holes for Rd. Groove Wheels:

1/2 3/4 1 in.

\$1.70 \$2.10 \$3.00 100 feet.

Angular for Sq. Groove Wheels:

Small Med. Large

\$1.50 1.90 2.60 100 feet.

Sliding Door, Iron Painted, 2 1/2 @ 3 1/4

Sliding Door, Wrought Brass, 1 1/4

in..... lb. 36¢..... 30%

Allitt Mfg. Co. Reliable Hanger Track

foot..... 10¢

Cronk's Double Braced Steel Rail, #

foot..... 3¢

Cronk's O. N. T. Rail..... 3¢

Lanes' O. N. T., # 100 ft. 1 inch, \$5.10;

1 1/2 inch, \$4.30; 1 3/4 inch, \$4.85.

Lanes' Standard, # 100 ft..... 3.75

Lawrence Bros., # ft. 11¢..... 60%

Lawrence Bros. New York..... 3¢

McKinney's Hinged Hanger Rail #

foot, 1..... 50%

McKinney's Stone Better..... # ft. 3¢

McKinney's Stand Yard..... # ft. 4 c

Myer's Stayon Track..... 50&10%

Safety Razors-

Safety Razors..... 40%

New Gem, in Tin Boxes..... # doz. \$12.50

New Gem, Extra Blades..... # doz. \$8.35

Gem Outlets (Razor, Strop, etc.)..... # doz. \$5.60

Complete Razor, extra Blade in Leather

Case..... # doz. \$27.00

Silberstein..... 40%

Reels- Fishing-

Bishop's Independent Fish Reel Spooler,

doz..... \$20.00

Hendryx:

M 8, Q 6, A 6, B 6, M 9 1/4 4008, Silver

Rubber Popolo, Nickel Popolo,

Aluminum, German Silver, Bronze,

3 1/4 N, 1 1/2 N 4 N to 8 N..... 33&5%

6 H W, 102 P and RN, 202 P and PN, 40

G V..... 20%

24 N to 28 PN..... 35&10&10%

124 N, 974 PN, 002904 PN, 1020 R

and PRN, 202 PR and PRN..... 50&5%

2004..... 40&10&5%

5000 PN and N..... 50%

2004 P..... 50&10&5%

3904 PN..... 60%

0292 N..... 40&10%

02084 N..... 45&12&5%

Single Action Trout..... 40&10%

9 1/2 P, 802 and 1802 N..... 0&10%

Competitor, 304 and 304 PN..... 35%

10304 P and PN..... 40&5%

Safety and Salmon..... 30%

Registers-List July 1, 1903.

Black Jap..... 70¢

White Jap..... 70¢

Bronzed..... 70¢

Nickel Plated..... 70¢

Electro Plated..... 70¢

Registers, Cash-

Sun, No. 10, Metal Cabinet..... \$30.00

Sun, No. 10, Wood Cabinet..... \$25.10

Revolvers-

Single Action..... 85@90¢

Double Act n, except 44 cal..... \$1.90

Double Action, 44 caliber..... \$2.05

Automatic..... \$3.60

Hammerless..... \$4.10

Note- Jobbers frequently cut the

above prices of manufacturers for

small trade.

Riddles, Hardware Grade

16 in., per doz..... \$2.25@2.50

17 in., per doz..... \$2.50@2.75

18 in., per doz..... \$2.75@3.00

Rings and Rings-

Bull Rings-

Steel..... \$0.70 0.75 0.80 doz.

Copper..... 1.00 1.15 1.40 doz.

Hog Rings and Rings-

Hill's Rings..... gro. boxes, \$4.50@5.50

Hill's Rings, Gray Iron, doz. 55@60¢

Hill's Rings, Mal. Iron, doz. 75@80¢

Blair's Rings..... per gro. \$5.00@5.75

Blair's Rings..... per doz. \$0.60@.65

Brown's Rings..... per gro. \$5.50@5.75

Brown's Rings..... per doz. \$0.75@.85

Rivets and Burrs-

Copper..... 50¢ 10¢ 50¢ 10¢ 10¢

Iron or Steel:

Tinners'..... 75¢ 10¢ 75¢ 10¢ 5¢

Miscellaneous..... 70¢ 10¢ 70¢

Rollers-

Acme, Stowell's Anti-Friction..... 50%

Barn Door, Sargent's list..... 60%

Cronk's Stay..... 60%

Cronk's Brinkerhoff..... 60%

Lane's Stay..... 33&5%

Screws—Bench and Hand—

Bench, Iron, doz. 1 in., \$2.50 @ \$2.75;
1 1/2, \$3.00 @ \$3.25; 1 3/4, \$3.50 @ \$3.75;
Bench, Wood, Bench, doz. 3/4, 50 @ 50¢;
Hand, Wood, 30 @ 30¢;
R. H. Mfg. Co., Hand, 30 @ 30¢;
Chapin-Stephens Co., Hand, 30 @ 30¢;
Coach, Lag and Hand Rail—
Lag, Common Point, list Oct. 1,
75 @ 75¢;
Coach and Lag, Gimlet Point, list
Oct. 1, 75 @ 75¢;
Hand Rail, list Jan. 1, '81, 60 @ 60¢.

Jack Screws
Standard list, 75 @ 75¢;
Millers Falls, 5 @ 5¢;
Millers Falls, Roller, 5 @ 5¢;
P. S. & W., 50 @ 50¢;
Sargent, 70 @ 70¢.

Machine—
List Jan. 1, '98.
Flat or Round Head, Iron, 50 @ 50¢;
Flat or Round Head, Brass, 50 @ 50¢.

Set and Cap—
Set (Iron or Steel), 70 @ 70¢;
Sq. Hd. Cap, 65 @ 65¢;
Hex. Hd. Cap, 65 @ 65¢;
Rd. or Filler Hd. Cap, 60 @ 60¢.

Wood—
List July 23, 1906.
Manufacturers' printed discounts:
Flat Head, Iron, 87 1/2 @ 10¢;
Round Head, Iron, 85 @ 10¢;
Flat Head, Brass, 85 @ 10¢;
Round Head, Brass, 80 @ 10¢;
Flat Head, Bronze, 77 1/2 @ 10¢;
Round Head, Bronze, 75 @ 10¢;
Drive Screws, 87 1/2 @ 10¢.

Scroll Saws—See Sc.
Scythes— Per doz.
Clipper Pattern, Grass, \$4.25 @ \$5.00;
Full Polished Clipper, \$4.75 @ \$5.50;
Grain, \$7.00 @ \$7.50;
Lipier, Grain, \$7.75 @ \$8.25;
Weed and Bush, \$4.20 @ \$5.00.

Seed rs— Raisin— 25 @ 30¢.
Sets— Axl and Tool—
Wood Hdl., 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100, 102, 104, 106, 108, 110, 112, 114, 116, 118, 120, 122, 124, 126, 128, 130, 132, 134, 136, 138, 140, 142, 144, 146, 148, 150, 152, 154, 156, 158, 160, 162, 164, 166, 168, 170, 172, 174, 176, 178, 180, 182, 184, 186, 188, 190, 192, 194, 196, 198, 200, 202, 204, 206, 208, 210, 212, 214, 216, 218, 220, 222, 224, 226, 228, 230, 232, 234, 236, 238, 240, 242, 244, 246, 248, 250, 252, 254, 256, 258, 260, 262, 264, 266, 268, 270, 272, 274, 276, 278, 280, 282, 284, 286, 288, 290, 292, 294, 296, 298, 300, 302, 304, 306, 308, 310, 312, 314, 316, 318, 320, 322, 324, 326, 328, 330, 332, 334, 336, 338, 340, 342, 344, 346, 348, 350, 352, 354, 356, 358, 360, 362, 364, 366, 368, 370, 372, 374, 376, 378, 380, 382, 384, 386, 388, 390, 392, 394, 396, 398, 400, 402, 404, 406, 408, 410, 412, 414, 416, 418, 420, 422, 424, 426, 428, 430, 432, 434, 436, 438, 440, 442, 444, 446, 448, 450, 452, 454, 456, 458, 460, 462, 464, 466, 468, 470, 472, 474, 476, 478, 480, 482, 484, 486, 488, 490, 492, 494, 496, 498, 500, 502, 504, 506, 508, 510, 512, 514, 516, 518, 520, 522, 524, 526, 528, 530, 532, 534, 536, 538, 540, 542, 544, 546, 548, 550, 552, 554, 556, 558, 560, 562, 564, 566, 568, 570, 572, 574, 576, 578, 580, 582, 584, 586, 588, 590, 592, 594, 596, 598, 600, 602, 604, 606, 608, 610, 612, 614, 616, 618, 620, 622, 624, 626, 628, 630, 632, 634, 636, 638, 640, 642, 644, 646, 648, 650, 652, 654, 656, 658, 660, 662, 664, 666, 668, 670, 672, 674, 676, 678, 680, 682, 684, 686, 688, 690, 692, 694, 696, 698, 700, 702, 704, 706, 708, 710, 712, 714, 716, 718, 720, 722, 724, 726, 728, 730, 732, 734, 736, 738, 740, 742, 744, 746, 748, 750, 752, 754, 756, 758, 760, 762, 764, 766, 768, 770, 772, 774, 776, 778, 780, 782, 784, 786, 788, 790, 792, 794, 796, 798, 800, 802, 804, 806, 808, 810, 812, 814, 816, 818, 820, 822, 824, 826, 828, 830, 832, 834, 836, 838, 840, 842, 844, 846, 848, 850, 852, 854, 856, 858, 860, 862, 864, 866, 868, 870, 872, 874, 876, 878, 880, 882, 884, 886, 888, 890, 892, 894, 896, 898, 900, 902, 904, 906, 908, 910, 912, 914, 916, 918, 920, 922, 924, 926, 928, 930, 932, 934, 936, 938, 940, 942, 944, 946, 948, 950, 952, 954, 956, 958, 960, 962, 964, 966, 968, 970, 972, 974, 976, 978, 980, 982, 984, 986, 988, 990, 992, 994, 996, 998, 1000.

Order for Lists—
Fl. Mail on Farce Piece, Hoo. Take
and Sho. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.

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Heinrich's Snips, 40¢;
Jeannings & Griffin Mfg. Co.'s, 6 1/2 to 10
inch, 40¢;
Niagara Snips, 40¢;
P. S. & W. Co., 20¢;
Triumph Pipe Shear, 9.00

Pruning Shears and Tools—
Cronk's Grape Shears, 33¢;
Cronk's Pruning Shears, 33¢;
Diston's Combined Pruning Hook
and Saw, 2 doz., \$18.00;
Diston's Pruning Hook, 2 doz., \$12.00;

John T. Henry Mfg. Co.:
Pruning Shears, all grades, 40¢ @ 40¢;
Orange Shears, 50¢ @ 50¢;
Grape, 40¢ @ 40¢;
Tree Pruners, 70¢;
P. S. & W. Co., 33¢.

Sheaves—Sliding Door—
Stowell's Anti-Friction, 50¢;
Patent Roller Hatfield's, Sargent's, 70¢;
Reading, 5¢;
R. & E. list, 33¢;
Wrightsville Hatfield's, 50¢.

Sliding Shutter—
Reading list, 50¢;
R. & E. list, 33¢;
Sargent's list, 50¢ @ 10¢.

Shells—Shells, Empty—
Brass Shells, Empty:
First quality, all gauges, 60¢ @ 5¢;
Clin ix, Club, Rival, 10 and 12 gauge, 85¢ @ 5¢.

Paper Shells, Empty—
Aeae, Ideal, Leader, New Rapid,
Magic 10, 12, 16 and 20 gauge, 2¢ @ 5¢;
Blu- Rival, New Climax, Challenge,
Monarch, DeHance, Rep-art-r, Yellow
Rival, 10, 12, 15 and 20 gauge, 20¢;
Climax, Union, League, New Rival,
10 and 12 gauge, 25¢;
Climax Union, League, New Rival,
14, 16 and 20 gauge (\$7.50 list), 20¢;
Expert, Metal Liner and Pigeon 11,
12, 16 and 20 gauge, 33¢ @ 5¢;
Robin Hood, Low Brass, 20¢ @ 10¢;
Robin Hood, High Brass, 30¢ @ 10¢.

Shells, Loaded—
Loaded with Black Powder, 40¢;
Loaded with Smokeless Powder,
medium grade, 4¢ @ 5¢;
Loaded with Smokeless Powder,
high grade, 40¢ @ 10¢ @ 10¢;
Robin Hood, Smokeless Powder,
Robin Hood, Low Brass, 50¢;
Come s, High Brass, 50¢ @ 10¢ @ 5¢.

Shoes Horse, Mule, &c.—
P. o. b., Pittsburg:
Iron, per keg \$3.85;
Steel, per keg \$3.60;
Barden's, all sizes, per keg, \$3.90.

Shot—
Drop, up to B, 25-lb. bag, \$1.60;
Drop, B and larger, per 25-lb. bag, \$1.85;
Buck, 25-lb. bag, \$1.85;
Chilled, 25-lb. bag, \$1.85;
Lead Shot, 25-lb. bag, \$2.00.

Shovels and Spades—
Association List, Nov. 15, 1907, 40¢.
Sieves and Sifters—
Hunter's Imitation, gro., \$10.50 @ \$11.00;
Buffalo Metallic Blue, S. S. & Co., per gr.:
1 1/2, 20; 1 1/4, 18; 1 1/2, 15; 1 1/4, 13;
\$1.20 \$13.50 \$14.40

National Mfg. Co.:
Victor, per gro., \$12.07;
Surprise, per gro., \$11.00;
No name, per gro., \$11.00;
Shaker (Barber's Pat.) Flour Sifters,
2 doz., \$3.00, 30¢.

Sieves, Tin Rim—
Per dozen.
Mesh, 1 1/2, 16, 13, 20;
Black full size, \$1.30, 1.25, 1.30, 1.35;
Plaid, full size, \$1.30, 1.35, 1.40, 1.45;
Black, scant, \$0.50, 1.00, 1.00.

Sieves, Wooden Rim—
Nested, 10, 11 and 12 inch.
Mesh 18, Nested, doz., \$0.9 @ 0.95;
Mesh 20, Nested, doz., 1.07 @ 1.05;
Mesh 24, Nested, doz., 1.30 @ 1.40.

Sinks—
Cast Iron—
Standard list, 60¢ @ 60¢ @ 0¢;
NOTE—There is not entire uniformity
lists used by jobbers.

Sinks Wagon—
Cast Iron, 65¢ @ 65¢ @ 10¢;
Malleable Iron, 40¢ @ 40¢ @ 50¢;
Steel, 40¢ @ 40¢ @ 10¢.

Slates, School—
Factory Shipments.
"D" Slates, 40¢ @ 10¢;
Noiseless Slates, 60¢ @ 5¢ tens.

Slaw Cutters—See Cutters.
Slicers, Vegetable—
Sterling, 10, \$2.00, 83¢.

Snaps, Harness—
German, 40¢ @ 40¢ @ 10¢;
Covert Mfg. Co.:
ier y, 30¢ @ 5¢;
High Grade, 45¢;
Jockey, 30¢ @ 10¢;
Trojan, 45¢;
Vankee, 45¢;
Vankee, Roller, 30¢ @ 5¢;
Covert's Saddlery Works:
Crown, 60¢;
German, 60¢;
Molli, 60¢;
Triumph, 60¢;
Onella community, 60¢;
Said Sewel, 60¢;
Sargent's Patent Guards, 60¢ @ 10¢.

Snaths—
Scythe, 40¢ @ 10¢ @ 10¢.

Snips, Tinner's—See Shears.**Spoons and Forks—****Silver Plated—**

Good Quality, 50¢ @ 10¢ @ 60¢ @ 5¢;
Cheap, 50¢ @ 10¢ @ 60¢ @ 10¢;
International Silver Co.,
1847 Rogers Bros. and Rogers & Hamil-
ton, 40¢ @ 10¢;
Rogers & bro., William Rogers Eagle
Brand, 50¢ @ 10¢;
Anchor Rogers Brand, 40¢;
Wm. Rogers & Son, 60¢ @ 10¢;
Simon L. & Geo., Rogers Co.,
Silver Plated Flat Ware, 60¢;
No. 77 Silver Plated Ware, 60¢ @ 10¢.

Miscellaneous—

German Silver, 60¢ @ 60¢ @ 5¢;
Cataragus Cutlery Co.,
Yukon Silver, 50¢;
Simon L. & Geo., Rogers Co.,
German or Nickel Silver, Special list
1 & 10¢.

Tinned Iron—

Teas, per gro., 15¢ @ 5¢;
Tables, per gro., 90¢ @ \$1.00.

Springs—

Gem (Coll), 20¢;
Star (Coll), 30¢;
Torrey's Rod, 30 in., 2 doz., \$1.10;
Victor (Coll), 50¢ @ 10¢ @ 10¢.

Carriage, Wagon, &c.

1 1/4 in. and Wider:
Black or 1/4 Bright, lb., 4¢ @ 5¢;
Bright, lb., 5¢ @ 5¢;
Painted Seat Springs:
1 1/2 x 22 1/2, per pr., 50¢ @ 55¢;
1 1/2 x 22 1/2, per pr., 60¢ @ 65¢;
1 1/2 x 22 1/2 and narrower, per pr.,
80¢ @ 85¢.

Sprinklers, Lawn—

Enterprise, 25¢ @ 20¢;
Philadelphia No. 1, 2 doz., \$12; No. 2,
\$15; No. 3, \$24.

Squares—

Nickel plated, List Jan. 5, 1907,
10¢ @ 10¢ @ 70¢ @ 10¢ @ 10¢;
Rosewood Ld. Try Square and T-
Bevels, 60¢ @ 10¢ @ 10¢ @ 70¢;
Iron Hdl. Try Squares and T-Bevels,
10¢ @ 10¢ @ 10¢ @ 70¢;
Diston's Try Sq. and T-Bevels, 70¢;
* Interbottom's Try and Miter,
40¢ @ 10¢ @ 40¢ @ 10¢ @ 10¢.

Squeezers—Lemon—

Wood Common, gro., No. 0, \$5.25
@ \$5.50; No. 1, \$6.50 @ \$6.50.
Wagon Porcelain lined,
Cheap, doz., \$2.00 @ 2.75;
Good Grade, doz., \$3.00 @ 3.50;
Tinned Iron, doz., \$0.75 @ 1.25;
Iron, Porcelain lined doz., \$2.90 @ 3.25.

Staples—

Tools—	Coopers'—
H. & J. White.....	20@20&5%
Hay—	
Wells' Hay Tools.....	50%
Wells' Hay Carriers.....	50%
Wells' Hay Forks.....	50%
Wells' Hay Pulleys.....	50%
Saw—	
Atkins' Cross Cut Saw Tools.....	40%
Simonds' Improved.....	33%
Simonds' Present.....	25%
Ship—	
L. & J. White.....	25%
Transom Lifters—	
See Transom	
Traps—	
Traps, Globe or Acme.....	doz \$1.15 to 1.55; gro. \$1.50 to 12.00
Harper, Champion or P. & Wagon.....	doz \$1.25 to 1.40; gro. \$1.50 to 13.50
Game—	
Onida Pattern.....	40@30&5%
Weymouth.....	45@45&5%
Harvey & Norton.....	65@45&5%
Onida Pattern.....	75@75&5%
Jump (Blake Pattern).....	100@50&10%
Mouse and Rat—	
Mouse, Wood, Choker, doz, holes.....	8% @ 9c
Mouse, Round or Square Wire.....	doz, 85@90c
Mary French Rat and Mouse Traps	
(Genuine).....	
No. 1, Rat, Each \$1.12 1/2; doz. \$12.00	
No. 3, Rat, doz. \$6.00; case of 50	\$5.25 doz.
No. 3 1/2, Rat, doz. \$4.75; case of 72	\$4.25 doz.
No. 4, Mouse, doz. \$3.50; case of 7	\$2.75 doz.
No. 5, Mouse, doz. \$2.75; case of 150	\$2.25 doz.
Schuyler's Rat Killer, No. 1, per doz. \$30.00	
No. 2, per doz. \$30.00; Mouse, No. 3,	\$18.00
J. M. Mast Mfg. Co., Per doz. \$50%	
Blizard.....	No. 12, \$3.00; No. 1, \$9.50
Old Nick.....	No. 30, 2.22; No. 2, 8.40
Joker.....	No. 5, 2.10; No. 3, 8.40
Imp'd Snap Shot, Mouse, per gro., 4	holes, \$2.40.
Imp'd Snap Shot, Mouse, per gro., 4	holes, \$2.40.

Trimmers Spoke—	
Bouquet's No. 1 and 2.....	33% & 50%
Wood's E. L.....	50%

Trowels—	
Dixson Brick and Pointing.....	30%
Dixson Plastering.....	25%
Dixson "Standard Brand" and Gar-	den Trowels.....
Kohler's Steel Garden Trowels, 5 in.	per doz. \$5.00
Kohler's Steel Garden Trowels, 6 in.	per doz. \$5.00
Never-Break Steel Garden Trowels.....	per doz. \$5.00

Trucks, Warehouse, &c.—	
E. L. Block Co.,	
New York Pattern.....	50&10%
Handy Trucks.....	per doz. \$15.00
Handy Trucks.....	per doz. \$15.00
Daisy Stove Trucks, Improved pattern	per doz. \$18.50
Model Stove Trucks.....	per doz. \$18.50

Tubs, Wash—	
Galvanized, per doz. \$5.15 5.67 6.48	
Galvanized Wash Tubs (S. S. & Co.),	
No. 12, net \$5.70 6.30 7.30 8.10	
Twine—Miscellaneous—	
No. 9, 1/4 and 1/2 lb. Balls.....	21c & 30c
No. 12, 1/4 and 1/2 lb. Balls.....	17c & 19c
No. 18, 1/4 and 1/2 lb. Balls.....	15c & 17c
No. 24, 1/4 and 1/2 lb. Balls.....	15c & 17c
No. 36, 1/4 and 1/2 lb. Balls.....	14c & 16c
Chalk Line, Cotton, 1/4 lb. Balls.....	25c

Ware Hollow—	
Cast Iron, Hollow—	
Stove Hollow Ware:	
Ground.....	50¢ to 10¢ 60%
Unground.....	60¢ to 65¢
White Enamelled Ware:	
Maslin Kettles.....	70%
Covered Ware:	
Tinned and Turned.....	50%
Enamelled.....	60%
See also Pots Glue.	
Enamelled—	
Agate Nickel Steel Ware.....	50¢ to 20
Agate Nickel Steel Ware, Specials.....	60¢ to 15%
Iron Clad Ware.....	70¢ to 10%
Lava, Enamelled.....	40¢ to 10%
Never Break Enamelled.....	50%

Tea Kettles—	
Galvanized Tea Kettles:	
1/2 in.....	8
Each.....	50c 80c 65c

Steel Hollow Ware.	
Avery Spiders & Griddles.....	65¢ to 55¢ & 5%
Avery Kettles.....	60%
P. & W. Griddles.....	50¢ to 50¢ & 5%
Never Break Spiders and Griddles.....	65¢ to 5%
Never Break Kettles.....	60%
Solid Steel Spiders & Griddles.....	65¢ to 5%
Solid Steel Kettles.....	60%

Warmers, Foot—	
Pike & Co., Soapstone.....	40¢ to 40¢ & 10%

Washboards—	
Solid Zinc:	
Crescent, family size, bent frame.....	\$3.00
Red Star, family size, stationary	protector.....
Double Zinc Surface:	
Saginal Globe, family size, station-	ary pr. vector.....
Cable Cross, family size, stationary	protector.....
Single Zinc Surface:	
Nalad, family size, open back perfo-	rated.....
Saginal Globe, protector, family	size, ventilated back.....
Brass Surface:	
Brass King, Single Surface, open	back.....
Nickel Plate Surface:	
No. 1001 Nickel Plate, Single Surface

Washers—	
Leather, Axle—	
Solid.....	30¢ to 10¢ 8¢ to 10¢ & 10%
Patent.....	30¢ to 10¢ 8¢ to 10¢ & 10%
Coil:	
1 1/2 1 1/4 1 1/2 1 1/4 1 1/2 1 1/4	
Size bolt.....	5-16 3/4 1/2 5/8 3/4
Washers.....	3-10 4-10 5-10 5-10 5-10
In lots less than one keg add 1¢ per	lb., 5-lb. boxes add 1/4¢ to list.

Cast Washers—	
Over 1/2 inch, barrel logs, per lb.....	13¢ to 3c

Waterers, Hogs—	
Improved Dewey, per doz.....	\$13.00

Wedges—	
Oil Finish.....	lb. \$2.90 to \$3.10

Weights—	
Hitching—	
Cover's Saddlery Works.....	60¢ to 10%

Sash—	
Per ton, f.o.b. factory:	
Eastern District.....	\$26.00
Western, Central and Southern	Districts.....
.....	\$27.00

Wheels, Well—	
8-in. \$1.10 to 1.80; 10-in., \$2.00 to 2.25;	
12-in., \$2.60 to 2.85; 14-in., \$3.00 to 3.25	

Wire and Wire Goods—	
Bright and Annealed:	
6 to 9.....	70¢ to 75¢ & 10%
10 to 18.....	70¢ to 75¢ & 10%
19 to 26.....	75¢ to 75¢ & 10%
27 to 36.....	75¢ to 75¢ & 10%

Wads—Price Per M.	
B. E., 11 up.....	60¢
B. E., 9 and 10.....	70¢
B. E., 8.....	80¢
B. E., 7.....	80¢
B. E., 11 up.....	\$1.00
F. E., 9 and 10.....	1.25
F. E., 8.....	1.50
F. E., 7.....	1.50
Elly's B. E., 11 and larger.....	\$1.70 to 1.75
Elly's P. E., 12 to 20.....	\$3.00 to 3.25

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Black, Carbon.....	W D	5	@10
Black, Prop. Amer.....	4	@ 6
Black, Prop. Eng.....	5	@15

NOVEMBER 4, 1903.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

Sheet and Bolt—
October 22, 1903. Net
Prices, in cents per pound.
Sheet 30 x 60.

	Not wider than	Not longer than	And longer than	64 oz. & over, 50 lb. sheet, 30 x 60 and heavier.
Ins.	Ins.	Ins.	Ins.	Ins.
18	72	18	18	18
19	72	18	19	19
20	96	28	19	19
21	96	18	19	19
22	96	18	19	19
23	72	18	19	19
24	96	72	18	19
25	96	18	19	19
26	120	96	18	19
27	120	18	19	19
28	120	18	19	19
29	120	18	19	19
30	120	18	19	19
31	120	18	19	19
32	120	18	19	19
33	120	18	19	19
34	120	18	19	19
35	120	18	19	19
36	120	18	19	19
37	120	18	19	19
38	120	18	19	19
39	120	18	19	19
40	120	18	19	19
41	120	18	19	19
42	120	18	19	19
43	120	18	19	19
44	120	18	19	19
45	120	18	19	19
46	120	18	19	19
47	120	18	19	19
48	120	18	19	19
49	120	18	19	19
50	120	18	19	19
51	120	18	19	19
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57	120	18	19	19
58	120	18	19	19
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62	120	18	19	19
63	120	18	19	19
64	120	18	19	19
65	120	18	19	19
66	120	18	19	19
67	120	18	19	19
68	120	18	19	19
69	120	18	19	19
70	120	18	19	19
71	120	18	19	19
72	120	18	19	19
73	120	18	19	19
74	120	18	19	19
75	120	18	19	19
76	120	18	19	19
77	120	18	19	19
78	120	18	19	19
79	120	18	19	19
80	120	18	19	19
81	120	18	19	19
82	120	18	19	19
83	120	18	19	19
84	120	18	19	19
85	120	18	19	19
86	120	18	19	19
87	120	18	19	19
88	120	18	19	19
89	120	18	19	19
90	120	18	19	19
91	120	18	19	19
92	120	18	19	19
93	120	18	19	19
94	120	18	19	19
95	120	18	19	19
96	120	18	19	19
97	120	18	19	19
98	120	18	19	19
99	120	18	19	19
100	120	18	19	19

Common High Brass.	11.	12.	13.	14.	15.	16.	17.	18.
Wider than	26	28	30	32	34	36	38	40
and including	28	30	32	34	36	38	40	42
To No. 20, inclusive ..	39	42	46	50	55	60	65	70
Nos. 21, 22, 23 and 24 ..	40	43	47	51	56	61	68	74
Nos. 25 and 26	41	44	48	52	57	63	71	77
Nos. 27 and 28	42	45	49	53	58	65	73	80

* Special prices not less than 80 cents.
Add 4¢ per lb. additional for each number thinner
than Nos. 28 to 38 inclusive. Discount from List.

* Special prices not less than 80 cents.
Add 4¢ per lb. additional for each number thinner
than Nos. 28 to 38 inclusive. Discount from List.

Brown & Sharpe's gauge the standard.	Com. high brass.	Low brass.	Gift brass and copper
All Nos. to No. 10, inclusive.....	\$0.23	\$0.27	\$0.28
Above No. 10 to No. 16.....	.23 ¹ / ₂	.27 ¹ / ₂	.28
No. 17 and No. 18.....	.24	.28	.32
No. 19 and No. 20.....	.25	.29	.33
No. 21.....	.26	.30	.34
No. 22.....	.27	.31	.35
No. 23.....	.28	.32	.36
No. 24.....	.30	.34	.38
No. 25.....	.32	.36	.40
No. 26.....	.35	.39	.43
No. 27.....	.42	.46	.46
No. 28.....	.42	.46	.53
No. 29.....	.45	.49	.54
No. 30.....	.48	.52	.56
No. 31.....	.51	.55	.57
No. 32.....	.55	.59	.61
No. 33.....	.59	.63	.65
No. 34.....	.64	.68	.68
No. 35.....	.70	.74	.73
No. 36.....	.76	.80	.75
No. 37.....	1.00	1.04	1.00
No. 38.....	1.30	1.34	1.30
No. 39.....	2.00	2.00	2.00
No. 40.....	2.60	2.60	2.50

Discount, Brass Wire, 25%; Copper Wire, Ngs
List November 16, 96.
Spring Wire, 2d & 3d advance.

Straight, but not turned, Rods, $\frac{5}{8}$ to 3 in. diameter, $\frac{1}{2}$ lb. net.
 Finished Piston Rods, $\frac{5}{8}$ to 2 $\frac{1}{2}$ in. diameter, $\frac{1}{2}$ lb. net.
 Other sizes and extreme lengths, special prices.

Duty: In Blocks or Pigs, 1¢ W B
Western Speller..... 61/204

Duty: Sheet, 3¢ p. n.
No. 9, base. casks..... 7 1/2¢ | Open, per D.....

Duty: Pigs and Bars and Old, 2½¢ @ B. Pipe and
Sheets, 2½¢ @ B.

Bar	3740 34
Pipe	3740 34
Tin Lined Pipe	3740 34
Block Tin Pipe	3740 34
Sheet Lead	3740 34
Old Lead in exchange	3740 34

1/4 & 1/8, guaranteed.....	18 @19
No. 1.....	16 @17

Prices of Solder indicated by private brand vary according to composition.

Cookson..... \$ 0 7 1/2

Duty: Crude, S&P B. Plates, Sheets, Bars and Rod

Small lots.....	40 00	37
100 lb. lots.....	39 00	37

Small lots	30 D 84
100 & lots	30 D 84

Wider than.....	6-in.	14-in.	24-in.
And including.....	14-in.	24-in.	30-in.

No. 20.....	.44	.46	.48
Nos. 21 to 23.....	.46	.48	.50
No. 24.....	.48	.50	

No. 26.....	.47	.54	.5
No. 27.....	.48	.57	.6
No. 28.....	.48	.52	.6

No. 30..... .50 .61
Note.—Lots of less than 50 lb 5¢ per lb extra.
Aluminum Wire, B. & S. Gauge

No. 9 to No. 10.....	40%	No. 17.....	53%
No. 11.....	41%	No. 18.....	53%
No. 12.....	41%	No. 19.....	53%

No. 14 P D 43½¢ No. 21 P D 55¢

Dealers' Purchasing Prices Paid in New York
Heavy Copper..... 2 1/2

Heavy Copper	1	3	1
Light and Tinned Copper	3	1	1
Heavy Brass	1	3	7

[illegible]

Tea Lead.....
Zinc.....

No. 1 Pewter
No. 2 Pewter
Base Aluminum Sheet 20

Pure Aluminum, Sheet, 7/8" D	41
Cast Aluminum, 7/8" D	16
Tin Plate scrap	2 ton \$ 50.05

Tin Plate Scrap..... gross ton \$12.00 @ 13.00
Wrought Scrap Iron..... gross ton \$12.00 @ 13.00
Heavy Cast Scrap..... gross ton \$12.00 @ 13.00

Heavy Cast Scrap.....	gross ton	\$12.00	9.50
Stove Plate Scrap.....	gross ton	\$9.00	8.50
Burnt Iron.....	gross ton	\$8.00	8.00

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